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**An Annotated Translation of
Chapter 7 of the *Carakasaṃhitā Cikitsāsthāna*:
Leprosy and Other Skin Disorders**

APPROVED BY

SUPERVISING COMMITTEE:

Supervisor:

Donald R. Davis

Joel Brereton

An Annotated Translation of
Chapter 7 of the *Carakasamhitā Cikitsāsthāna*:
Leprosy and Other Skin Disorders
by
Robert Joseph Gallagher, B.A., M.A.

Report

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Dedication

To my wife Virginia and our two daughters Michelle and Amy, who showed patience and understanding during my long hours of absence from their lives, while I worked on mastering the intricacies of the complex but very rewarding language of Sanskrit. In addition, extra kudos are in order for thirteen year-old Michelle for her technical support in preparing this report.

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Abstract

An Annotated Translation of Chapter 7 of the *Carakasamhitā Cikitsāsthāna*: Leprosy and Other Skin Disorders

Robert Joseph Gallagher, M.A.

The University of Texas at Austin, 2014

Supervisor: Donald R. Davis

The *Carakasamhitā* is an early Sanskrit text in the field of *āyurvedic* medicine. The *Cikitsāsthāna* is a section of that text dealing with treatments of various maladies, and Chapter 7 of this section discusses skin diseases. Most of the chapter describes symptoms and treatments for a disease which is called *kuṣṭha* in Sanskrit, and a smaller section is concerned with the diseases of *kilaśa* and *śvitra*. An attempt will be made, through the translation and interpretation of the chapter's 180 verses (*ślokas*) and their commentaries, to provide definitions of these terms, and to explore their relationship to the disease of leprosy. A discussion of different conceptualizations of leprosy in various cultures and time-periods will also be presented.

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Part I: The Theory and Principal Texts of *Āyurvedic* Medicine

The earliest medical references in written Indian literature are to be found in the Vedas, particularly the healing hymns of the *Rgveda* and the medical charms of the *Atharvaveda*. For example, magico-religious utterances (*mantras*) were used in the treatment of swellings, poisoning, mental disturbances, fever, and in the collection and preparation of medicines. The Vedic attitude towards disease was dominated by the belief in evil spirits and other malevolent forces which undermined a person's well-being (Zysk 1993, 8). In a system of healing based on magico-religious practices, the proper chant or ritual could restore wholeness.

The transition over approximately one millennium from Vedic magico-religious texts to the appearance of the *Carakasamhitā* and the *Suśrutasamhitā*, which are “the earliest purely medical literature in India” (Dominik Wujastyk 1998, 18), has not always been clearly understood. Some elements of the magical practices and the moralistic etiology of the Vedas survived in these two early *āyurveda* texts, but a shift to empirical evidence and attempts at systematic classification dominated the new medical system of *āyurveda*.

Kenneth G. Zysk has posited a plausible hypothesis, by which healers with Buddhist, Jain and other affiliations developed medical theory and practical techniques, influenced in part by the concept of aberrant psychological phenomena called *doṣas*,

which were central to the development of Buddhist religious doctrine (1991, 119).

The term *doṣa* in the Buddhist lexicon refers to a moral fault or deficiency, three in number, by means of which humans fall into spiritual or psychic illness. It was adopted, with a medical connotation, as one of the central concepts of *āyurveda*. It has often been translated as ‘humor’ (Greek χυμος), in imitation of that classical western medical concept, with the implication being that *doṣas* are somehow analogous to humors, and that they operate in a similar way. Thus, the pathological conditions described in *āyurvedic* texts are presumed to be generated by an imbalance among the *doṣas* (humors) of the body (Filliozat 1964, 30).

Zysk has argued against this notion of the equivalence of *doṣas* with Greek humors in two ways. He states the obvious fact that there are four humors (black bile, yellow bile, phlegm and blood), while there are only three *doṣas* (air, bile and phlegm), and he cites the presence of blood in the Greek humoral theory and its absence in the *doṣa* theory (Zysk 1991, 119).

Even though it is true that blood (*rakta* or *ṣṛk*) does not appear with the same frequency as the three recognized *doṣas* (*vāta*, *pitta* and *kapha*, ‘air’, ‘bile’ and ‘phlegm’, respectively) in the *Carakasamhitā*, it is sometimes referenced as having an effect similar to that of a *doṣa*. For example, in *śloka* 148 of Chap. 7 in the *Cikitsāsthāna*, blood is linked with *pitta* and with *vāta* as being instrumental in causing ailments, as in the compounds *raktapitta* and *vātasṛk*, used much like *vātakapha* and *vātapitta* in *ślokas* 28-29.

In addition, in the Bower manuscript, a Sanskrit medical text found in the Central Asian oasis of Kucha and dating from about the fourth century C.E, several references are made to four *doṣas*. In *śloka* 93 of Part I, blood is mentioned alongside the more common triad of *doṣas*, and in *ślokas* 106-108, blood is again given equal importance alongside air, bile and phlegm (Hoernle 1983, 21,23). The Bower manuscript has in other respects proven remarkably consistent with other Sanskrit medical texts, and the medicinal plant formularies are almost exactly the same as are found in the *Carakasamhitā*. The precise conclusion to be drawn is uncertain, but the concept of a triad of *doṣas* is seen as less indisputable, and perhaps more arbitrary. Not enough evidence exists to posit a common source for the Greek humoral and the Indian *doṣa* theories, but it is possible that an original tetrad was pruned to a triad in order to accommodate *āyurveda* medical theory to the pre-existing Buddhist concept of three *doṣas*.

The other controversy regarding *doṣas* is their exact role in the genesis of disease. Early medical texts align with the pejorative Buddhist usage of the word *doṣa*, implying not a humor in the Greek sense of the word, but an aberrant substance, which by its very nature causes physiological dysfunction (Dominik Wujastyk 1998, 33). Modern English has similarly marginalized the functions of certain internal organs, recognizing them only in cases of problem-causing malfunctions, generating pejorative terms such as “bilious” and “choleric”. Zysk has coined the interesting term “peccant humor” to describe the older meaning of the word. (1991, 30) Nevertheless, in later

texts, the term *doṣa* came to assume its more benign identity as a neutral agent, causing difficulties only through its malfunction (Dominik Wujastyk, 33), and thus probably influencing translators who seized upon ‘humor’ as the optimal rendering of *doṣa*.

Another possible result of the adoption of Buddhist medical methodology might have been the huge influx of medicinal plants and inorganic remedies into the pharmacopeia of Indian medicine during the interval between Vedic times and the era of *āyurveda*. It cannot be stated with certainty if the uncrease in the inventory of available medicinal plants was due to the openness of Buddhist healers to new techniques and medicines, or was just part of an inevitable absorption of local material culture to the original Vedic repertoire. It is suggestive, however, of a new flexibility in healing techniques.

T. Burrow offers a long list of borrowings of plant- names, many of which found use as medicinal plants, from the pre-Aryan languages of the Indian sub-continent. From Austro-Asiatic languages came *alābu* ‘bottle gourd’ or ‘bitter gourd’; *kadalī* ‘banana’; *karpāsa* ‘cotton’; *tāmbūla* ‘betel’; *marica* ‘black pepper’; *sarṣapa* ‘mustard’. From Dravidian languages come *aguru* ‘aloe wood’; *arka* ‘*Calotropis gigantea*’; *kuvalaya* ‘lotus’; *ketaka* ‘*Pandanus odoratissimus*’; *kemuka* ‘*Colocasia antiquorum*’; *candana* ‘sandalwood’; *tāla* ‘palmyra palm’; *nirguṇḍī* ‘*Vitex negundo*’; *paṭola* ‘*Tricosanthes dioeca*’; *punnāga* ‘*Calophyllum inophyllum*’; *bilva* ‘*Aegle marmelos*’; *mallikā* ‘jasmine’; *murūṅgī* ‘*Moringa pterygosperma*’, and *hintāla* ‘marshy date tree’ (1973, 379-385).

Medicinal plants, such as the aforementioned, have played a very important role in the practice of *āyurveda*, along with the conceptual framework of the disease-causing *doṣas* and various techniques such as purging (*virecana*), emesis (*chardī*), and sudation (*svedana*). The healing arts of *āyurveda* also include recommendations on proper diet, exercise and hygiene, and even sexual activity. In the large compendium of medical writings known as the *Carakasamhitā*, the authorship of which is traditionally attributed to an individual named Caraka, the healing arts are organized into eight sections.

The first section is the *Sūtrasthāna*, which deals with food, medicines, some diseases and treatments, and various other topics. The *Nidānasthāna* discusses the causes of diseases, the *Vimānasthāna* various subjects such as nutrition and pathology, and the *Śārīrasthāna* philosophy, anatomy and embryology. The *Indriyasthāna* deals with diagnosis and prognosis, the *Cikitsāsthāna* with therapeutics, and the *Kalpasthāna* with medical formularies. Finally, the *Siddhisthāna* covers various other aspects of therapy (Dominik Wujastyk 1998, 41).

In regard to the compendium of the *Carakasamhitā*, there is much uncertainty as to the actual identity of the supposed author Caraka, and the date of composition. It is generally accepted that the *Carakasamhitā* was first put together some time around the second or third century B.C.E., and was amended by an individual named Dṛḍhabala in the 4th or 5th century C.E. (ibid., 40). Commentaries were added even later, the principal commentator being a Bengali known as Cakrapāṇidatta, who most likely lived in the

eleventh century (Jolly 1977, 7).

The chapter on serious skin disorders (*kuṣṭha*), which is the focus of this report, is the seventh of thirty chapters of the therapeutics section (*Cikitsāsthāna*) of the *Carakasamhitā*. Different permutations of the Sanskrit term *kuṣṭha* appear in modern vernaculars of the Indian sub-continent to denote the specific disease known as leprosy. An attempt will be made to identify the skin disorders described in Chapter 7 of this early work, and to determine if indeed they may be classified as types of leprosy, or if they might be assigned to other pathological categories.

Part II: Leprosy

Modern Scientific Knowledge about Leprosy

It is possible to speak narrowly of leprosy as a chronic infectious disease of the skin and nerves, mainly the peripheral ones, caused by *Mycobacterium leprae*” (Roberts and Manchester 1997, 142). This bacillus was identified in 1874 by the Norwegian physician Gerhard Hansen, and for this reason leprosy is often eponymously termed Hansen’s disease. Two distinct forms, *lepromatous* leprosy and *tuberculoid* leprosy, are recognized, as well as numerous variants which are further grouped into two additional classes of *indeterminate* and *borderline (dimorphous)* leprosy (Canizares 1982, 272).

Typical signs of leprosy in the upper part of the body may include bloody nasal discharge, perforation of the nasal septum, deterioration of the larynx resulting in a harsh-sounding voice, loss of eyebrows, and the intrusion of distorting nodules into the area of the face, culminating in a lion-like visage termed “leonine facies” (ibid., 274).

Manifestations in the skin are termed *macules* (spots or colored areas), *papules* (small bumps or pimples that are raised above the surrounding area), and *nodules* (protrusions of groups of cells). In general, these skin irregularities appear pink or reddish in color in fair-skinned individuals, and coppery or dark in color in dark-

skinned individuals. Depigmentation (*vitiligo* or *leucoderma*) may also occur in persons of darker skin (*idem*).

Ocular pathologies may also be present, either by the direct presence of *Mycobacterium leprae* in the eyes, or by alterations of the trigeminal or facial nerves. These changes can include opacity, ocular spots or nodules, or cataracts (*ibid.*, 278-279).

Central to the diagnosis of leprosy is the loss of tactile sensation (*anesthesia*). Occurring earlier in some instances of leprosy, and later in others, the impairment of peripheral nerves is almost always present. Most commonly involved are the *ulnar*, in the elbow area, the *peroneal*, in the lower leg, the *great auricular*, at the side of the neck, and the *superficial radial*, just above the wrist (*ibid.*, 277). As a result of neural degeneration, extremities may suffer bone atrophy, which can lead to the visual impression that fingers and toes have fallen away (*ibid.*, 279).

Conceptualizations of Leprosy in Different Cultures

Because of our empirical accumulation of data and our reliance on scientific analysis, we have a more precise knowledge of the nature of the ailment or group of ailments which are termed *kuṣṭha* in Sanskrit medical treatises. In earlier traditions, the specter of leprosy and similar inexplicable skin maladies were more likely to evoke fear and aversion. In the *Atharvaveda*, as in other works of early works of Sanskrit literature, vague references to *kuṣṭha* in Book II, Hymn XXIV, *śloka* 7 (Griffith 1985, 51),

and to general plant remedies in Book VIII, Hymn VII (ibid., 340-343), lacked any precise information or methodology for medical treatment. They belonged rather to a magico-religious system, which had not yet developed an appreciation for empiricism and medical theory.

By the time of the *Carakasamhitā*, about a millenium later, Indian knowledge of leprous diseases, most likely under the influence of the schools of thought noted previously by Zysk, had evolved into a more empirical system. The etiology of *kuṣṭha* had incorporated both behavioral and dietary causes for the disease, as well as retaining some vestiges of the earlier moralistic strictures, the violation of which led to disease, e.g., disrespect of *brahmins* as a cause of *kuṣṭha* (*śloka* 8 of Chap. 7). In the *Carakasamhitā*, a delineation of the eighteen types of *kuṣṭha* is given, including color descriptors for most of the skin lesions characteristic of each type (*ślokas* 14-26).

Early Chinese society also tried to conceptualize the dread disease of leprosy, along with other skin disorders, but through a somewhat different process. Medical texts compiled information on diseases using two different methods. One described symptoms, and the other classified ailments based on the cosmological or environmental influences that caused their occurrence. *Li* designated skin diseases which were characterized by such signs as numbness of the skin, sores, missing eyebrows, collapse of the bridge of the nose, hoarse voice and deformed extremities (Leung 2009, 18-20).

In respect to environmental or cosmological influences which could cause

disease, the five phases or agents (*wu xing*), which are wood, fire, earth, metal and water, the various permutations of *yin* and *yang*, and the five *qi* (atmospheric influences), which are wind, cold, dampness, dryness and fire, are all factors. Of the latter group, wind (*feng*) was considered especially virulent. In a list of maladies caused by *dafeng* (big wind), a group of three appear to be similar in description to the leprous diseases called *li* (ibid., 20).

Later on, during the Song dynasty, writers began to merge *li* disorders into the list of diseases induced by *feng*. In the eleventh-century work called *Shengji zonglu*, skin diseases of the leprous type were named *dafeng/li* or *lifeng* or ‘skin disease caused by wind’ (ibid., 24).

The next innovation in conceptualization was introduced by Chen Yan in 1174 in *A Treatise on the Three Categories of Pathogenic Factors of Disorders* (*San yin ji yi bingzheng fang lun*). He took skin diseases outside of the realm of wind-induced ailments, and created a new category of *waike* (external symptoms, i.e., on the surface of the body). This breaking with traditional modes of thinking paralleled a significant new distinction among medical practitioners (ibid., 25-26).

While elite Confucian doctors persisted in their wind-based analysis of maladies, many Daoist healers, guided by the innovative *waike* method of perceiving skin diseases, as well as other ailments, explored new techniques in therapeutics. The Daoists, often marginalized as itinerant or illiterate healers, were willing to utilize

acupuncture, surgery, drugs, moxibustion and other hands-on practices in their treatment of skin disorders, while the conservative Confucian doctors were repulsed by victims of leprosy, and often refrained from offering treatment(*ibid.*, 26).

The practical experience and empirical knowledge gained by the innovative healers gradually infiltrated the medical establishment. One of their main insights, that *anesthesia* was the main indication of leprosy, was recognized in the sixteenth-century work *Liyang jiyao*, in which the palace doctor Xue Ji mentions *anesthesia* as the primary sign of what he termed *mafeng* (numbness caused by wind), a term which is used even today in Chinese to designate the disease of leprosy (*ibid.*, 30-31). The concept of *feng* had become earth-bound. It was no longer a cosmic force, but a localized toxin resembling fire, as described by Xu Chunfu in the sixteenth century (*ibid.*, 29). It was impure *qi* (breath, life-force), perhaps akin to the *vāta doṣa* of *āyurveda*. The Daoist healers had brought innovation to the Chinese medical establishment, which had resisted at first, but then had gradually come to accept the fruits of the practical learning of the Daoists.

The process in Chinese society echoed what had happened in Indian culture, in which healers of Buddhist and various other affiliations expanded and challenged the conventional thinking of the *brahmins*, which was based on traditional Vedic learning. These innovative healers were eventually assimilated into the medical occupations under the new system of *āyurveda*(Zysk 1991, 118).

Other early traditions also attempted to comprehend the gruesome

phenomenon of leprosy. Drawing on the discussions of *tzaraath* in Leviticus, Ch. 13-14, early Jewish scholars debated the proper way to conceptualize this skin disease. Earlier English translations of *tzaraath* usually rendered this word as ‘leprosy’, and a more precise identification of *tzaraath* still remains elusive. As in the early Indian tradition, moral transgressions were capable of precipitating a physical ailment on the skin, the most visible of all human organs. In the Jewish writings, however, we perceive not so much an attempt to placate the often incomprehensible forces of the natural world and find favor with deities, as an attempt to live in compliance with the laws which have already been handed down by the Jewish God, and thereby obtain grace and well-being (Brody 1974, 113-118).

In the *Mishnah*, the body of commentarial and interpretative learning passed down through numerous generations until finally committed to writing in the second century of our era, the sixth and last division (*Tohorot*) contains a section called *Negaim* which deals with *tzaraath*. Even though the verbal category of *tzaraath* might very well include the disease which we now know as leprosy, that it is not restricted solely to that usage is clear from the fact that small parts of *Negaim* also discuss its role in the contamination of clothes and houses. The thinking behind the system of mental categories which grouped leprous diseases with what at least seem to be mildew or dry rot is not readily accessible to us (Neusner 1988, 1001-1008).

An interesting point of comparison with the *Carakasamhitā*, however, is the extended discussion about the different colors of the skin disorders associated with the

human manifestations of *tzaraath*, and the speculation as to the number of different types of *tzaraath*. One scholar in *Negaim* puts the number at sixteen, and two others postulated thirty-six and seventy-two (Lipman 1974, 277). In this regard, it is interesting to note the observation of R.E. Emmerick on the widespread agreement of the major *āyurvedic* texts on the number of types of *kuṣṭha* (eighteen), except for the text of the *Nāvanītaka*, a section of the Bower Manuscript, which cites thirty-six (which is, of course, a multiple of eighteen) (1984, 97).

While it may be tempting to speculate, on the basis of superficial numerical congruence, on some common source of the conceptualization and classification of leprous diseases within the two traditions, it is fair to say that the Jewish tradition as expressed in the *Negaim* had a different orientation. The absence of any references to *anesthesia*, the primary indicator of leprosy, and the limited descriptions of symptoms, suggest to us that medical diagnosis and classification are not the main considerations in these passages, but are secondary to the religious goals of the adjudication of ritual purity, and its loss and re-establishment. Any purely medical treatments for leprosy or related skin diseases which may have been available in early Jewish society are not accessible to us in *Negaim*, and we have only possible references to leprosy in terms of its impact on the individual's spiritual cleanliness, and his relationship to his community. The seventeenth-century scholar Klai Yakar saw leprosy as an external manifestation of spiritual evil and a punishment for that evil. The fact that there was no known cure for the disease indicated its divine origin. He suggested that it could

only be alleviated by moral regeneration (Brody 1974, 118-119).

Early Christian commentators adopted Jewish views on the moral etiology of leprosy. Justin Martyr (c.103-c.165), in an exegesis of the fourteenth chapter of Leviticus, wrote that leprosy was to be understood as “an emblem of sin” (ibid., 132). Tertullian (c.160-c.230), in a commentary on the fifth chapter of Luke, described a leper as “a person who was defiled with sins”(idem).

A few scholars were able to transcend the moralistic thickets in which the conceptualization of leprosy had become enmeshed. One of them was the famous Persian ibn-Sina (980-1037), better known as Avicenna, who classified causes of leprosy along environmental, dietary and behavioral lines, and by so doing influenced other theorists and medical specialists (Demaitre 2007, 162-171). Demaitre cites, without giving precise sources, the repeated warning by many specialists against “regularly eating fish with milk in the same meal” (2007, 164). This same incompatible combination of foods is also mentioned in the *Carakasamhitā Sūtrasthāna*, verses 82-83, where it is implicated as a cause of *kuṣṭha*. In general, however, perceptions of leprosy in medieval Christian society were colored not by empirical evidence and logical deduction, valid or otherwise, but by moral considerations.

In order to protect society from the moral pollution of lepers, the authorities in medieval Europe empowered tribunals, along the lines of the priestly arbiters featured in Leviticus and *Negaim*, to ascertain the presence of leprosy, and, in affirmative rulings, to determine corrective action or even punishment suitable for the leprous

sinner. The first judicial procedure involving medical doctors took place at Siena in 1250 (Demaitre 2007, 37). Depending upon the time and place, pronouncements could run the gamut from isolation and confinement to sentences of death (Brody 1974, 69).

Scrutiny of possible cases of leprosy intensified after the period of the Crusades, because Crusaders returning from the Holy Land had brought leprosy home with them. It is estimated that by the end of the twelfth century, one out of every 200 Europeans was infected with leprosy (Magner 1992, 124).

Then Europe witnessed a dramatic turnaround. By the end of the fifteenth century, leprosy had virtually disappeared from Northeastern Europe. By 1547, it was reported that the *lazarets* (leprosaria) in England were empty, and they were declared unnecessary in France in 1695. As Fred C. Kluth stated in 1951: “The decline of leprosy in Europe is perhaps one of the most remarkable epidemiological phenomena in its history.” (1951, 21) He then went on to offer various theories for its decline, but none of them was entirely convincing.

In 1997, Charlotte Roberts, on the basis of careful consideration of data and new medical information, came to a startling conclusion. It had been known for some time that the bacilli for tuberculosis and leprosy (*Mycobacterium tuberculosis* and *Mycobacterium leprae*, respectively), were very closely related. Roberts, working on a hypothesis of immunity from leprosy acquired by means of exposure to tuberculosis, then established a correlation between the increase of instances of tuberculosis in the increasingly denser town environments of the late medieval period, and the decline in

cases of leprosy. Roberts cited the osteoarchaeological evidence of the late medieval period, namely the almost total absence of both tuberculosis and leprosy lesions in the same skeleton, as proof that exposure to tuberculosis conferred immunity to leprosy. In rare instances where both kinds of lesions were present, Roberts drew on accounts of tuberculosis in twentieth-century leprosy to postulate that, although tuberculosis exposure resulted in immunity to leprosy, the converse was not true (1997, 149-150).

Today, leprosy is a disease which is found to any significant extent only in a few tropical countries such as India and the Philippines. The hideous facial disfiguration and bodily corruption characteristic of leprosy which previously roused such enmity and fear, to the extent that lepers were thought of as “the living dead”, have for the most part vanished from modern consciousness. A cursory view of different conceptualizations of leprosy diseases in various historical periods and locales has turned up a *mélange* of distortions, misunderstandings and prejudice, and it has been only recently in historical terms that an objective and scientific view point has prevailed. Many questions concerning leprosy diseases, however, remain unanswered.

Part III: Chapter Seven of the *Cikitsāsthāna*

Of the thirty chapters (*adhyāya*) of the *Cikitsāsthāna* section of the *Carakasamhitā*, the seventh one focuses on skin disorders (*kuṣṭha*).

The seventh chapter contains one hundred and eighty verses (*ślokas*), clustered around different topics such as the etiology and classification of skin disorders, their signs and symptoms, treatment and prognosis.

The text used in this report is titled: *Carakasamhitā by Agniveśa, revised by Charaka and Dṛdhabala with the Āyurveda-Dīpikā Commentary of Chakrapāṇidatta, edited by Vaidya Jādavaji Trikamji Āchārya*. It was published by Chaukhambha Sanskrit Sansthan in Varanasi in 1984.

The source text has one or more *ślokas* of text, followed by commentarial exegesis. The translation of the text is reproduced here in bold font. To selected comments made by Cakrapāṇidatta and others were added any insights gained from modern dermatology, and the identification of medicinal substances. Sections which called for no particular comment were merged with previous texts.

The translation drew on the previous translations done by Ram Karma Sharma and Vaidya Bhagwan Dash, and by Priyavrat Sharma. Acknowledgement is given to their great work, and the only aim here was to make the language more colloquial, and to provide more information on the medicinal plants, which are ubiquitous in the

Carakasamhitā. Dominik Wujastyk argues that the original text used common Sanskrit terms for plants, and by using English vernacular words rather than scientific terms, the translator captures more of the original flavor of the text (1998, 26). This seems like a very sensible idea.

In providing English equivalents to Sanskrit medicinal plants, the Sanskrit original is cited in the first occurrence of the plant's name in the text; thereafter, only the English term is given. As noted in the introduction to the glossary, the identification of Sanskrit medicinal plants is sometimes an undertaking with uncertain conclusions. The best effort has been made to provide a high degree of clarity.

Part IV: Translation and Analysis

(1-2) Now we will discuss the treatment of skin disorders, as related by Lord Ātreya.

The source of the medical wisdom contained in this treatise is the sage Ātreya, who had six disciples. One of them, Agniveśa, codified the teachings of Ātreya. The presentation of the work, therefore, is in the form of instructions given to Agniveśa by Ātreya. At the end of the chapter, it is further stated that the text has been redacted (*pratisaṅskṛta*) by Caraka, whose name has been given to the entire compendium.

(3) Listen, O Agniveśa, to the causes, sites and remedies of the skin disorders which are characterized in particular by destruction of the tactile sense.

Other ailments such as *piplu* and *vyaṅga* (skin diseases marked by various types of blotches) also exhibit some slight degree of tactile impairment (*sparśanaghna*), but here, the symptom of *anesthesia* is the determining feature of the skin disorders known as *kuṣṭha*. (from the commentary of Cakrapāṇidatta, who will hereafter be cited as C.). Also, because of the ambiguity of the word *kuṣṭha*, future references to it will either be left untranslated, or rendered as “leprous diseases”. The term “leprous” is used in the first sense listed in Webster’s New World Dictionary of the

American Language, College edition, viz. “.of or like leprosy”. This leads to the avoidance of cumbersome circumlocutions such as “leprosy and other skin disorders” found in Priyavrat Sharma’s translation of the *Carakasamhitā*, or the “.obstinate skin diseases including leprosy” found throughout Ram Karan Sharma and Vaidya Bhagwan Dash’s translation.

(4-8) Partaking of incompatible food and drinks and oily and heavy beverages; repressing the act of vomiting and other impulses of nature; participating in physical exercise in sweltering heat or after a heavy meal; circumventing the prescribed routine for dealing with heat, cold, fasting and feasting; taking cold water immediately after any exposure to sun, exertion or after being frightened; eating uncooked food, or eating when undigested food is still present; using proscribed items during *pañcakarma* therapy; over-indulgence in fresh grains, curds, fish, salty and sour substances; gorging on gram, radishes, baked goods, sesame, milk and molasses; having sexual intercourse before the digestion of food is complete; indulging in daytime sleeping; disrespecting *brahmins* and teachers; and committing sinful acts.

The concept of incompatibility (*virodha*) among certain foods, e.g., fish and milk, is treated at length in Chapter 26, *ślokas* 81-84 of the *Sūtrasthāna* section of the *Carakasamhitā*. Likewise, admonitions

concerning the proper circumstances for ingestion of food and drink are given in *ślokas* 86-101 of the same chapter. It is interesting to compare these with the incompatibility of such foods as meat and dairy products under kosher law in the Jewish tradition, based on readings of Exodus 23:19, Exodus 34:26, and Deuteronomy 14:21, and to speculate on whether adverse physiological effects led to the two sets of prohibitions, or whether divine or sacerdotal injunction was the sole factor.

The term *pañcakarma* refers to the intensive detoxifying procedure which plays a prominent role in the practice of *āyurvedic* medicine. The concluding items on the list of causes of *kuṣṭha*, viz., disrespect of *brahmins* and other sins, perhaps reflect a vestige of the earlier, moralistic medical etiology of the Vedas, in contrast to what typically tends to be an empirical approach to causation in the *Carakasamhitā*.

(9-10) The triad of *doṣas* beginning with air, once having been corrupted, then corrupts the skin, blood, muscle and lymph. This seven-fold aggregation accounts for the pathogenesis of *kuṣṭha*. Thus, the seven and eleven varieties of *kuṣṭha* are generated, and none is generated by a single *doṣa*.

Even though all three *doṣas* are involved in each case of *kuṣṭha*, the key concept is one of predominance. Whether a single *doṣa* is predominant, or a combination of two is predominant, or the vitiation of all three is

severe (as in the case of *kākaṇa kuṣṭha*), the sum of all the possibilities is equal to seven, which is the number of major types of *kuṣṭha*.

(11-12) The prodromal symptoms of *kuṣṭha* are: absence of tactile sensations (*sparśājñatva*); either excessive or absent perspiration; discoloration of the skin; round, red blemishes; bristling hair; itching; tingling pain; fatigue; languor; painful lesions which appear quickly and persist; burning sensations; and numbness of limbs.

As previously noted, anesthesia (*sparśājñatva*) is a major indicator of leprosy. As noted in *A Manual of Dermatology for Developing Countries*, sensory alteration tests are highly useful in the diagnosis of leprosy. Impairment of tactile sensation, pain threshold and thermal sensitivity are all important indicators (Canizares 1982, 278).

Because of the deterioration of the skin on a cellular level, perspiration also is either diminished or absent in the tuberculoid form of leprosy. The other signs of leprosy listed in *ślokas* 11-12 are also found in modern medical literature (ibid., 273-280).

(13-20) And now, we proceed to describe the signs and symptoms of the eighteen types of *kuṣṭha*: *kapāla*, *udumbara*, *maṇḍala*, *ṛṣyajihva*, *puṇḍarīka*, *sidhma*, *kākaṇaka*, *ekakuṣṭha*, *carmākhyā*, *kiṭima*, *vipādikā*, *alasaka*, *dadru*, *carmadala*, *pāmā*, *visphoṭa*,

śatāru and *vicarikā*.

Herein are the seven major *kuṣṭhas*-

That which has the appearance of rough and jagged shards of black and red pottery, is exceedingly painful and difficult to cure, is known as *kapāla kuṣṭha*. The one with burning sensations, itching and pain, circumscribed by redness, with brown hair, and resembling an *udumbara* fruit, is known as *udumbara kuṣṭha*. The *kuṣṭha* called *maṇḍala* is white and red, stable, dense, oily and with raised circles. It is difficult to cure, and patches of it overlap each other. The one named *ṛṣyajihva* is rough, reddish on its edges and brown inside, painful, and like the tongue of the *ṛṣysjihva* antelope. The one called *puṇḍarīka* is whitish with red margins, elevated, burning, and like lotus leaves. Shallow, white and copper-colored, *sidhma* discharges a powder when touched. It resembles the flower of the bitter gourd (*alābu*) plant, and is generally located in the chest area. The one which is the color of the seeds of Indian liquorice (*guñjā*) and is exceedingly painful, is the *kākaṇa kuṣṭha*. It has symptoms of all three *doṣas*, and is incurable.

One of the meanings of *kāpala* is ‘fragment of brick or pot’. In the description of *kāpala kuṣṭha*, skin eruptions are compared to black and red potsherds. The history of black and red-patterned pottery in South Asia, likely created by the inverted position of the vessels in the

kiln, is described in *Indian Protohistory* by M.K. Dhavalikar. He states that this type of pottery had a very wide distribution in India throughout the second and first millennia B.C.E. (1997, 85).

Modern medical science does not recognize so many distinct varieties of leprous diseases. Many cases simply fall into the *borderline* or *indeterminate* categories. Many of the signs listed in this chapter of the *Carakasamhitā*, however, do appear in modern handbooks, without being assigned to a specific group, such as the eighteen posited here. Thus, the elevated whitish lesions with red margins which occur in instances of *punḍarīka*, are recognized under the category of *macular lesions*, and might be indicative of any of the four divisions of leprosy named by modern medical science.

(21-26) The eleven minor *kuṣṭhas* are as follows:

With *ekakuṣṭha*, no perspiration occurs. It is expansive, and resembles fish-scales. *Carmākhyā* is thick like the skin of an elephant. That which is black, coarse, and rough to the touch as a callus is known as *kiṭīma*. With the very painful *vipādikā* type, cracking of the hands and feet occurs. The one known as *alasaka* is characterized by itching, redness and nodules. With *dadru*, itching, redness, pimples and elevated round areas are present. That which has redness, itching, pustules, pain, cracking, and also sensitivity, is known as *carmadala*.

***Pāmā* exhibits extremely itchy eruptions of white, reddish or black color.**

With *visphoṭa*, there might be reddish or white pustules having thin walls.

In the case of *śatāru*, there can be many lesions which are red and black, and are burning and painful. *Vicarcikā* exhibits itchy blackish eruptions with much oozing.

The “fish-scales” noted in *ekakuṣṭha* are described in scientific terms as manifestations of *parakeratosis*, in which there is a “shiny appearance of the surface of the skin, often accompanied by the appearance of scales” (Rogers and Muir 1940, 214). In *vipādikā*, cracking of the hands and feet occurs. The terminology used now is *hyperkeratosis*, which is the cracking of the thickened epithelium of the hands and feet (ibid., 196).

(27-33) With a preponderance of air, one may find the *kapāla kuṣṭha*, with bile the *maṇḍala*, and with phlegm, the *udumbara*. *Kākaṇa* is generated by all three *doṣas*. *Ṛṣyajihva*, *puṇḍarīka* and *sidhma kuṣṭhas* are produced by air-bile, phlegm-bile, and air-phlegm, respectively. *Carmākhyā*, *ekakuṣṭha*, *kiṭima*, *vipādikā*, and *alasaka* are generally known to come from an excess of air and phlegm. *Pāmā*, *śatāru*, *visphoṭa*, *dadru*, and *carmadala* come usually from a surfeit of bile and phlegm, and *vicarikā* from phlegm. All *kuṣṭhas* are caused, in varying degrees, by the three *doṣas*. Each *kuṣṭha* is to be treated according to its particular observed signs. One should perceive the most salient symptom of each *kuṣṭha*, and that should be neutralized first, and subsequently the other ones.

From a particular type of *kuṣṭha* it can be ascertained which *doṣas* are involved, as can the *kuṣṭha* be determined by which *doṣas* are involved. The cause may be known from the *kuṣṭha*, and the *kuṣṭha* may be revealed by the causative factors.

This last passage seems to indicate a tendency to preserve theoretical consistency, possibly at the expense of pragmatic healing. The assertion of such certainty implies a reluctance to learn from practical experience. Even though modern medical practitioners are thoroughly committed to the use of scientific data to facilitate healing, it is safe to say that flexibility and adaptability also play a necessary role in diagnosis and care. There is some slight recognition of the practice of medicine as an art, rather than as an exercise in applying established *dicta*, in *śloka* 42-47 of Chapter 18 of the *Sūtrasthāna* section of the *Carakasamhitā* (“the physician should not feel ashamed of being unable to name a disorder”).

(34-36) These are signs of obstructed air in *kuṣṭha*- roughness, dryness, stinging, throbbing pain, shrinking, hardness, coarseness, bristling, and black and reddish color.

These are signs of obstructed bile in *kuṣṭha*- burning, redness, pain, oozing, inflammation, the odor of raw meat, viscosity, and the dropping off of limbs.

Signs of obstructed phlegm in *kuṣṭha* are paleness, chilling, itching, localization, elevation, heaviness, lubricity, consumption by insects, and stickiness.

The dropping off of limbs (*aṅgapātana*) is an image which has been perennially associated with the disease of leprosy. Modern medical handbooks, however, have not authenticated instances of this phenomenon. The sequence of events leading up to an apparent loss of extremities involves atrophy and absorption of the phalanges of the hand, and of the phalanges and metatarsals of the feet. This bone atrophy leads to a shortening and an apparent disappearance of the extremities.

(37-38) A wise physician should shun a person who is marked by all the symptoms, by weakness, thirst, burning, depletion of appetite, and consumption by insects. If air and phlegm are disruptive, but only one of these *doṣas* is predominant, then the problem can be cured somewhat easily. If, however, phlegm and bile, or air and bile are both strong, then the cure is difficult.

The notion of rejecting patients because of adverse manifestations may seem to modern physicians a violation of a doctor's obligations to heal and console. This *āyurvedic* concept is thoroughly explored by Dagmar Wujastyk in *Well-Mannered Medicine*. In Chapter 4, she discusses circumstances, enumerated in different *āyurvedic* texts, under

which physicians may, for reasons of safeguarding professional reputation, or simply because of an acknowledgement of the limits of medical treatment, reject patients (2012, 110-116).

(39-49) In *kuṣṭhas* dominated by air, clarified butter (ghee) is needed, and in those dominated by phlegm, vomiting is needed. In cases of predominance of bile, first purging, and then blood-letting is prescribed. For the emetic and purging regimens in cases of *kuṣṭha*, the prescriptions detailed in the formularies (*kalpa*) section are used. In regard to blood-letting, grating of the skin is recommended in less serious cases, while in more serious cases, opening of a vein is preferred. A *kuṣṭha* patient afflicted with several *doṣas* should be purged multiple times, while safeguarding his vitality, because the air from the forceful expulsion of *doṣas* can quickly endanger a debilitated person. After the digestive tract is voided and the blood drawn, a dosage of an oily substance should be given, since after an evacuation, air swiftly takes hold. When the *doṣas* in the heart area are agitated, the patient with *kuṣṭha* in the upper part of the body should be given emetics, such as the fruit of kurchi (*kuṭaja*), emetic nut (*madanaphala*), and liquorice (*madhuka*) mixed with snake gourd (*paṭola*) and neem (*nimba*) juice. Sugar-cane liquor (*śītarasa*), liquor made from sugar-cane and brown sugar (*pakvarasa*), different types of honey (*madhu*) and liquorice are useful emetics in treatment of *kuṣṭhas*, while the turpeth plant (*trivṛta*), the three myrobalans (*triphālā*), and wild

croton (*dantī*) are recommended for purging. Solutions can be made by the addition of fermented barley-water (*sauvīraka*), fermented bean- husk water (*tuṣodaka*), a solution of turpeth (*ālodāṇa*), and two types of alcoholic drinks (*āśava* and *sīdhu*). Depending upon the type of purging, certain regimens of diet should be followed. The *kuṣṭha* patient is given an enema prepared from Indian barberry (*dārvī*), Indian nightshade (*bṛhatī*), cuscus grass (*sevya*), snake gourd, neem (*picumarda*), emetic nut, purging cassia (*kṛtamāla*), the seeds of the kurchi plant (*kaliṅga*), barley (*yava*) and nut grass (*mustā*), along with some oil. If, after the administration of the *nirūḍha* purging, some air remains, then an oily enema (*anuvāsana*) may be given, depending upon the condition of the patient. Oily substances are prepared with emetic nut, liquorice, neem, kurchi, and snake gourd. An inhalation made of rock salt (*saindhava*), wild croton, black pepper (*marica*), sweet basil (*phaṇījjhaka*), long pepper (*pippalī*), Indian beech tree (*karañja*) fruits and embelia (*viḍaṅga*) may be used against parasites, leprosy diseases, and disorders caused by phlegm (*kapha*). The type of cleansing inhalation of smoke described in the *Sūtrasthāna* eliminates parasites, leprosy diseases, and leucoderma in the area of the head.

The term *dhūma* “smoke” here in Chapter 7 has been rendered ‘smoking’ or ‘inhalation’ by the translations of both R.K. Sharma and Priyavrat Sharma, but the latter also offers ‘snuff’ as another alternative. In the *Sūtrasthāna* section of the *Carakasamhitā* (Chap. 5, *śloka* 26), Sharma

and Bhagwan Dash employ the term ‘cigar’ to describe the procedure of *dhūma*, thus suggesting the use of paraphernalia to deliver the smoke.

(50-53) For lesions which are stable, rough and rounded, sudation either on a bed or through tubes, followed by grating with a brush, is used. The contaminated blood is thus removed. Sudation with tepid bundles (*poṭṭalis*) of marshy and aquatic animals is also used, after which incisions are made with a sharp instrument to remove blood. For smaller cuts in cases of *kuṣṭha*, a horn, gourd, or leeches may be used to draw blood and dispel the *kuṣṭha*. Only after the cleansing of the blood and the elimination of blockages from the area of congestion may the applied ointments bring effective relief.

Sudation (also called fomentation) is described in *ślokas* 42-43 of Chap. 14 of the *Sūtrasthāna* of the *Carakasamhitā*. *Prastara* sudation is applied to a patient reclining on a bed, using different types of heated plant materials. *Nāḍī* sudation is the inhalation of various heated substances through a tube (*nāḍī*) which resembles an elephant’s trunk in shape.

(54-57) In cases where surgery is not appropriate, and in which tactile sensations have been lost, treatment with an alkaline substance (*kṣāra*) may be utilized, subsequent to the removal of blood and blockages. If the patches are rock-hard, rough, uneven, numbed, stable, and of long duration, then a dose of medication

containing antidotes should be administered, followed by an application of a poisonous substance. If the patches are stiffened, lacking any feeling at all, and without perspiration or itching, then they should be roughened with brushes of wild croton, turpeth, oleander (*karavīra*), Indian beech and kurchi, or with the leaves of jasmine (*jāti*), milkweed (*arka*) or neem, or with instruments, a cuttlefish bone (*samudra phena*), or cow-dung. Thereafter, ointments are to be applied.

Use of sharp instruments might be contraindicated in cases where the lesions are adjacent to a crucial vein or artery (*sirā*).

The preparation of an alkaline extract (*kṣāra*) is explained by Sebastian Pole in *Ayurvedic Medicine*. First, dry herbs are incinerated, and then mixed with four parts of water. This pulpy substance is stored overnight, and then strained through a cloth until clear liquid appears. The liquid is evaporated until a pure white solid (*kṣāra*) emerges (2006, 72).

(58-59) The treatment of *kuṣṭhas* caused by bile problems is similar to that for *kuṣṭhas* caused by air and phlegm, i.e., by elimination of phlegm, bile and blood with bitter and constricting drugs. Ghee with bitter substances, as well as any other remedies for the removal of bile and blood applied internally or externally, are to be used in cases of *kuṣṭha* caused by bile.

C. refers to *ślokas* 140-143 for a recipe of ghee mixed with bitter herbs,

including neem, snake gourd, Indian barberry and several other plants.

There it is called *Tiktaṣaṭpalaka ghr̥ta*. The same recipe can be seen, with very few minor variations, in Part II, Chapter 2, section 4 of the Bower Manuscript, where it is called *Tikatka ghr̥ta* (Hoernle 1983, 92). C. also references *ślokas* 144-150 for a formulary called *Mahātiktakaghr̥ta*.

This is also found, in virtually identical form, in Section V of the Bower Manuscript (ibid., 93).

(60-64) The measures for treating *kuṣṭha* which have been articulated above are based on whichever *doṣa* is predominant. I will now set forth general remedies for treating *kuṣṭha* based on various skin conditions.

Indian barberry in a solid concoction (*rasāñjana*) or Indian barberry (*dāruharidrā*), along with cow's urine, alleviates *kuṣṭha*. In the same way, chebulic myrobalan (*abhayā*), the three spices (*trikaṭu*), molasses (*guḍa*) and sesame oil (*taila*) are used for the period of one month.

One *pala* each of the roots of snake gourd and bitter cucumber (*gavākṣi*), one *pala* each of the three separate pulpy components of the three myrobalans, and one *pala* of Indian gentian (*trāyamāṇa*), black hellebore (*kaṭurohiṇī*) and dried ginger (*nāgara*) in combination are pulverized. One *pala* of this powder, boiled in water and ingested, relieves congestion. Once this is digested, a soup made from old *śālī*

rice, along with the meat of animals and birds of arid environments, should be given. This regimen, when given for six nights, lessens *kuṣṭha*, swellings, bowel disorders, hemorrhoids, difficult urination, jaundice, cardiac and bladder pain, and irregular fever.

C. reminds that, in *śloka* 7, excessive intake of molasses and sesame is listed as a cause of leprous diseases. He explains that, in this case, because of their combination with chebulic myrobalan (*abhayā*), a kind of synergy (*saṃyoga mahimnā*) is achieved, which is beneficial to the curing of *kuṣṭha*.

As a general rule, thin gruel (*peyā*) is given after a purging. The recommended administration of soup made from animals and birds of dry habitat is an anomaly.

(65-72) Nut grass, the three pungent spices (*vyoṣa*), the three myrobalans, madder (*mañjiṣṭhā*), Himalayan cedar (*devadāru*) two types of the five roots (*pañcamūla*), bark of the dita tree (*saptacchada*) and neem, bitter apple (*viśālā*), leadwort (*citraka*) and bowstring hemp (*mūrvā*) are pulverized, mixed with nine parts of meal (*tarpaṇa*), and blended with honey and ghee. A portion of this is effective in targeting the removal of *kuṣṭha*. It also combats swellings, anemia, leucoderma, bowel disorders, hemorrhoids, hernia, fistula, boils, itching and rashes. Such is *mustādi* powder.

Two *palas* each of the three myrobalans, Indian aconite (*ativiṣā*), black hellebore (*kaṭuka*), neem, kurchi, sweet flag (*vacā*), snake gourd, long pepper, turmeric (*haridrā*) and Indian barberry, bird cherry (*padmaka*), bowstring hemp, bitter apple, green chiretta (*bhūnimba*) and bastard teak (*palāśa*), twice that total amount of turpeth, and again twice that amount of water hyssop (*brāhmī*), all ground into powder- this is an excellent remedy for numbness (*supti*).

Sulphur (*leṭṭaka*), taken with the juice of jasmine and honey, is an excellent remedy for the seventeen types of *kuṣṭha*, as is copper pyrite (*suvarṇamākṣika*) with urine.

Mercury (*rasa*) processed with sulphur (*gandhaka*) or copper pyrite yields an excellent remedy which overcomes all ailments for the *kuṣṭha* sufferer who swallows it. Combined with diamonds (*vajra*), bitumen (*śilājatu*) or a concoction (*yogarāja*) based on Indian bdellium (*guggulu*), it offers a panacea for the *kuṣṭha* patient who partakes of it.

It is not certain why only seventeen, instead of the usual eighteen, types of *kuṣṭha* are cited. The commentary makes no mention of the discrepancy.

(73-80) The gum from the decoction of eight *palas* each of the heartwood of the catechu tree (*khadira*) and Himalayan cedar is used as a solution to which is added one *prastha* of honey. To this are added eight *palas* of granulated iron (*ayascūrṇa*),

and one *karṣa* each of the three myrobalans, cardamom (*elā*), cinnamon (*tvak*), black pepper, tamala leaf (*patra*) and Assam ironwood (*kanaka*), and one *prastha* of thickened sugar-cane juice (*matsyaṅḍikā*), which is like honey. This should be kept in a vessel for one month. The taking of this honey rum (*madhvāsava*) dispels *kuṣṭha* and *kilāsa*. Such is *madhvāsava*.

One *droṇa* of a decoction of catechu should be kept in a jar smeared with ghee. Six *palas* each of powdered preparation of the the three myrobalans, the three pungent spices, emblic myrobalan, turmeric (*rajanī*), nut grass, greater neem (*aṭaruṣaka*) and kurchi seeds (*indrayavā*), the bark of Indian barberry (*sauvarṇī*) and heart-leaved moonseeds (*chinnaruhā*) are to be added. This is to be kept inside a heap of rice grains for a month. Taken in the appropriate way every morning for a month, this recipe cures the major types of *kuṣṭha*, and in the same way, cures the minor types in two weeks. It also eliminates hemorrhoids, asthma, fistula, bronchitis, leucoderma, urinary problems and consumption. By taking these *kanakabindu* spirits, one develops a golden hue. Such are the *kanakabindu* spirits.

Partaking of it is beneficial in *kuṣṭha* caused by air and phlegm, and even by bile. For *kuṣṭha* caused by phlegm, however, a decoction of purging cassia is particularly useful.

C. advises that, in order for fermentation to take place, sugar must also be added, as in the preparation of *madhvāsava* (*ślokas* 73-75).

(81) A liquor of the three myrobalans, prepared from molasses and combined with leadwort, catechu (*kramuka*), the ten roots, wild croton, bark of purging cassia (*varāṅga*) and honey, cures *kuṣṭha*.

According to C., this recipe is unique in that molasses is called for instead of sugar (*śarkarā*). Even though the proportions of the ingredients are not specified here, C. states that they are to be determined based on the proportions found in other liquors (*āsavas*).

(82-96) In the case of *kuṣṭha*, one should be familiarized with light and healthful foods and bitter vegetables, foods and ghee prepared with marking nut (*bhallātaka*), the three myrobalans, and neem, aged grains only, the butchered meat of animals of dry land, and mung beans (*mudga*) combined with snake gourd. Not to be taken are heavy and sour food, milk, curds, meat of marshland animals, fish, molasses and sesame.

A paste mixed from cardamom, the costus plant (*kuṣṭha*), Indian barberry, fennel (*śatapuspā*), leadwort, embelia, a solidified form of Indian barberry, and myrobalan is good for *kuṣṭha*.

After being pulverized, white leadwort, cardamom, red gourd (*bimbī*), bitter apple, turpeth, milkweed and dried ginger are suffused with an alkali of bastard teak which has been steeped in cow urine for eight days. Smearing with this paste, followed by exposure to the sun's heat, causes circular spots to crack

and dissipate.

A paste of Indian spikenard (*māmsī*), black pepper, salt (*lavaṇa*), turmeric, valerian (*tagara*), thorny milk-hedge (*sudhā*), soot, cow urine and bile, and an alkali of bastard teak dispels *kuṣṭha*.

Granulated tin (*trapu*), lead (*sīsa*) and iron (*ayas*) cure circular spots, as does a compound of redwood fig tree (*phalgu*), leadwort, Indian nightshade, lizard broth (*godhārasa*), salt, Himalayan cedar, and cow urine.

From banana (*kadalī*), bastard teak, trumpet-flower tree (*pāṭalī*), and the hizal tree (*nicula*) is produced an alkaline liquid which is transparent. This is used with meat, flour, and a fermenting agent (*kiṇva*). From these is generated an alcoholic substance (*medaka*). The yeast extracted from this is made into a paste. Under the heat of the sun, this will eradicate *kuṣṭha* and destroy parasites.

A bath liquid called *siddhārthaka* may be created from nut grass, emetic nut, the three myrobalans, Indian beech, purging cassia (*āragvadha*), seeds of kurchi, Himalayan cedar, and dita (*saptaparṇa*). This substance is used as an emetic, a purgative, and a facial lotion and scrub. It combats skin disorders, *kuṣṭha* and swellings, and dispels jaundice.

A paste is made from the costus plant and the seeds of Indian beech and heart-leaved moonseeds (*eḍagaja*), which will eradicate *kuṣṭha*.

The seeds of senna (*prapunnāḍa*), rock salt, solid extract of Indian barberry, wood apple (*kapiṭṭha*), and the lodh tree (*lodhra*), the roots of white oleander, the

fruits of kurchi and Indian beech, the bark of Indian barberry, and the young leaves of jasmine (*sumanā*) are all made into a paste which is effective in curing *kuṣṭha*.

A paste of the lodh tree, fire-flame bush (*dhātakī*), the seeds of kurchi (*vatsaka*), Indian beech (*naktamāla*), and jasmine (*mālatī*) is used as an ointment and cream in cases of *kuṣṭha*.

Siris tree (*śirīṣa*) bark, Levantine cotton tree (*kārpāsa*) flowers, and the leaves of purging cassia (*rājavyrkṣa*) and black nightshade (*kākamāci*) are used to make four varieties of paste which alleviate *kuṣṭha*.

C. explains the double use of Indian barberry by clarifying that the term *dārvī* refers to the bark of the tree, and the term *rasāñjana* refers to a concoction based on the stem of that tree.

In *śloka* 90, Gaṅgādhara Sena, a nineteenth-century commentator, has a reading of *modaka* ‘pill’ instead of *medaka*. This is less likely, since a fermenting agent (*kiṇva*) is being used to treat a meat extract, and the resulting substance is in all likelihood a liquid rather than a pill.

In *śloka* 92, C. interprets *tvagdoṣa* ‘skin disorders’, as referring to *kilāsa*, *vyāṅga*, and other types of skin diseases, as distinct from the term *kuṣṭha*, which immediately follows. This is an indication that leprous diseases were considered to be separate from other afflictions of the skin.

(97-101) Indian barberry and its solid extract, neem and snake gourd, heartwood of catechu, purging cassia, and kurchi (*vṛkṣaka*), the three myrobalans, and dita - these six formulations, along with a seventh one, which is chariot tree (*tinisa*), and an eighth, which is Indian oleander (*aśvamāra*), are cures for *kuṣṭha*, and are useful for baths and for imbibing. These decoctions are useful for lotions, abrasives, and dusting, and for making oils and ghee, all for the purpose of combating *kuṣṭha*.

Taking decoctions of the three myrobalans, neem, snake gourd, madder, Indian redwood tree (*rohiṇī*), sweet flag, and turmeric on a regular basis will eliminate *kuṣṭhas* caused by phlegm and bile. When ghee is added to these substances, any *kuṣṭha* caused by a predominance of air will be positively overcome.

C. mentions that, even though oleander (*aśvamāra*) is poisonous, it is useful in the treatment of *kuṣṭha*, because the administration of poisons is beneficial in this disease.

(102-104) Oil prepared with the costus plant, milkweed, copper sulphate (*tuttha*), bayberry tree (*katphala*), radish (*mūlaka*) seeds, Indian redwood tree, black hellebore, kurchi fruit, water-lily (*utpala*), nut grass, Indian nightshade, oleander, iron sulphate (*kāśīsa*), heart-leafed moonseed, neem, velvet-leaf (*pāṭhā*), climbing

nettle plant (*durālabhā*), leadwort, embelia, seeds of bitter melon (*tiktā ālabu*), kamala dye plant (*kampillaka*), mustard seed (*sarṣapa*), sweet flag and barberry tree alleviates *kuṣṭha*. This can also be used in a lotion, an ointment (*udvartana*), an abrasive (*pragharṣaṇa*), or a powder (*avacūrṇana*).

In referencing the use of oils, C. states that sesame may be used internally, while mustard oil is best used externally.

(105-110) Oil prepared from white oleander, cow urine, leadwort and embelia is an effective and well-attested cure for *kuṣṭha*.

Oil prepared from the paste of the roots, young leaves and bark of white oleander, from kurchi, embelia, the costus plant, roots of milkweed, mustard seed, the drum-stick plant (*śiṅgu*) bark, Indian redwood tree and black hellebore makes up one part of a formulation, and cow urine makes up four parts. Massaging with this oil dispels *kuṣṭhas* and itching. Such is the oil prepared with the young leaves of white oleander and the like.

By taking a paste made with the seeds of bitter bottle-gourd, two types of copper sulphate, cow bile (*[go]rocanā*), turmeric and Indian barberry (*haridre dve*), fruits of Indian nightshade, castor (*eraṇḍa*), bitter apple, leadwort, bowstring hemp, iron sulphate, asafoetida (*hiṅgu*), drum-stick plant, the three pungent spices (*tryūṣaṇa*), Himalayan cedar, coriander (*tumburu*), embelia, superb lily (*lāṅgalaka*), the bark of the kurchi plant, black hellebore, and Indian redwood

tree, and preparing an oil as one part of a formulation, another four parts are comprised of cow urine. Massaging with this oil combats itching and *kuṣṭha* and breaks up air and phlegm. Such is the oil of bitter gourd and the like.

C. comments on the two types of copper sulphate- *mayūra tuttha* and *kharparika tuttha*. The former is presumably of a color like that found on peacocks (*mayūra*). The latter is a duller color used as a collyrium. It is described by Dutt (p.71) as being grayish in color.

(111-134) To a paste of golden thistle (*kanakakṣiri*), arsenic sulphide (*śaila*), blue fountain bush (*bhārgi*), and the fruits and roots of wild croton, the young leaves of jasmine, mustard seed, garlic (*laśuna*), embelia, Indian beech tree bark, dita, the young leaves, roots and bark of milkweed, neem, leadwort, butterfly pea (*āśphotā*), Indian liquorice (*guñja*), castor, Indian nightshade, radish, basil (*surasa*), the fruits of shrubby basil (*arjaka*), velvet-leaf, nut-grass, coriander (*tumburu*), bowstring hemp, sweet flag, the *śadgrantha* variety of sweet flag, heart-leaved moonseeds, kurchi, drum-stick plant, the three pungent spices, marking nut, sneeze-wort (*kṣavaka*), orpiment (*haritāla*), Indian borage (*avākpupṣṭī*), one variety of copper sulphate, kamala dye plant, another variety of copper sulphate (*amṛtasañjna*), alum (*saurāṣṭrī*), iron sulphate, bark of Indian barberry, and natron salts (*sarjikālavaṇa*), is added mustard oil prepared along with the roots and young leaves of oleander. All of this, taken as one part, is to be combined

with four parts of cow urine. After the preparation is complete, it should be kept in a bitter gourd. Massaging with this remedy brings the immediate improvement of circular spots, causing them to crack open, and also cures parasites and itching. Such is the golden thistle remedy.

The paste made from the costus plant, Mysore gamboge (*tamalapatra*), black pepper, arsenic sulphide (*manaḥśīla*) is to be heated with oil, and then kept in a copper vessel for seven days. With the application of this ointment, and exposure to sun, *sidhma* may be overcome in seven days. After this regimen is followed for one month, with no bath taken, the body is purified, and the early stages of leucoderma may be eradicated. The oils from mustard seed, Indian beech tree, luffa (*koṣātakī*) and the zachum oil plant (*iṅgudī*) are useful in the treatment of *kuṣṭha*, and this is also said about the heartwood of catechu.

Ghee or oil should be added to cork swallow-wort (*jīvantī*), madder, Indian barberry, kamala dye plant, milk, and copper sulphate. To this preparation should be added the sap of the dammer tree (*sarjarasa*) and beeswax (*madhucchiṣṭa*). Massaging with this oil cures the *vipādikā*, *carmaka*, *kiṭima* and *alasaka* types of *kuṣṭha*. Such is the *vipādikā*- eliminating ghee and oil.

Application of a cream made from a leavening agent, boar's blood (*varāha rudhira*), greater cardamom (*pṛthvīkā*), rock salt, and coriander seeds (*kustumburūṇi*) alleviates the *maṇḍala* type of *kuṣṭha*.

As is attested, the use of a cream made from Bengal quince (*pūtīka*), Himalayan cedar, sweet flag (*jaṭilā*), cucumber (*pakvasurā*), pale-colored honey (*kṣaudra*), mung-leaf (*mudgaparṇī*) and Indian perry (*kākanāsā*) combats the *maṇḍala* type of *kuṣṭha*.

These six creams, mixed with whey (*dadhimaṇḍa*), are sure to dispel *kuṣṭhas* caused by air and phlegm:

Leadwort and drum-stick plant (*śobhāñjana*);

Heart-leaved moonseeds, rough chaff tree (*apamarga*) and Himalayan cedar;

Catechu;

Crane tree (*dhava*);

Black turpeth tree (*śyāmā*), wild croton and purging nut (*dravantī*)

Lac (*lākṣā*), mixture of Indian barberry and milk, cardamom and Indian hogweed (*punarnavā*).

The use of heart-leaved moonseeds, the costus plant, rock salt, fermented barley-water, mustard seeds and embelia (*kṛmighna*) neutralizes parasites and the *maṇḍala* and *dadru* types of *kuṣṭha*.

A cream of heart-leaved moonseeds, the sap of the dammer tree, radish seeds, mixed with sour gruel (*kāñjika*), is commended by various sources as being a useful ointment in the treatment of *sidhma kuṣṭha*.

Malabar nut (*vāsā*), the three myrobalans, Indian nightshade, cuscus grass, snake gourd, Indian sarsaparilla (*sārivā*), and Indian redwood are taken as potions, in bathing, in ointments, and in creams. Likewise, catechu, purging cassia, arjun tree (*kakubha*), white cedar (*rohitaka*), the lodh tree, kurchi, crane wood, neem, dita bark and oleander are used in bathing and as potions.

Andropogon (*jala*), the costus plant (*vāpya*), aloe (*loha*), fragrant poon (*keśara*), cinnamon tree, bulrush (*plava*), sandalwood and lotus-stalk (*mṛnāla*), each successive ingredient in greater proportion, are made into a cream, which is useful for the treatment of *kuṣṭhas* caused by bile and phlegm.

A cool solution of liquorice (*yaṣṭayāhva*), the lodh tree, bird cherry, snake gourd, neem and sandalwood, taken as a potion or in bathing, is beneficial for sufferers of *kuṣṭha* caused by bile.

A salve made from perfumed cherry (*priyaṅgu*), black cardamon (*hareṇuka*), fruits of kurchi, Indian aconite, cuscus grass, sandalwood, Indian redwood and clearing-nut tree (*kaṭaka*) is also useful.

For *kuṣṭhas* with burning sensations, massaging with bitter ghee, thoroughly-washed ghee and oils made from sandalwood, liquorice, lotus-root (*prapaundarika*), and water-lily is beneficial.

In cases of putrefaction (*kleda*), falling away of the extremities, burning sensations, skin eruptions (*visphoṭaka*), as well as in the *carmadala* types of *kuṣṭha*, cooling ointments, showers, blood-letting, purging, and the use of bitter

ghee are useful.

C. comments that the term *ghṛtatailapāka* in śloka 120 signifies the use of a mixture of ghee and oil, which is called *yamakapāka* in *āyurveda*.

(135-143) For *kuṣṭhas* caused by a predominance of blood and bile, the preferred and accepted remedies are catechu mixed with ghee, neem mixed with ghee, Himalayan cedar mixed with ghee, and snake gourd mixed with ghee.

One half of a *pala* each of the pulp from the three components of the three myrobalans, and of the leaves of snake gourd, and one *karṣa* each of black hellebore, neem, liquorice and Indian gentian should be added to two *palas* of split lentils (*masuravidala*), and then boiled in one *āḍhava* of water until only one-eighth remains. It is then filtered. To this decoction is added four *palas* of ghee, and then it is heated until eight *palas* remain. This then is offered as a lukewarm potion. It dispels *kuṣṭha* originating from obstructions of air and bile, erysipelas, severe gout, fever, burning sensations, swellings, abscesses (*vidradhī*), mental confusion and eruptions (*visphoṭa*).

Half a *pala* each of neem, snake gourd, Indian barberry, black hellebore (*tiktarohiṇī*), the three myrobalans, trailing rungia (*parpaṭaka*), and Indian gentian should be boiled in an *āḍhaka* of water until one-eighth remains. Then it is strained, and half a *karṣa* each of sandalwood, chiretta (*kirātatikta*), long pepper,

Indian gentian, nut grass and kurchi seeds, and six *palas* of fresh ghee should be combined, and cooked. It assuages *kuṣṭha*, fever, swellings, hemorrhoids, dysentery (*grahaṇī*), jaundice (*pāṇḍvāmaya*), edema (*svayathu*), scabies (*pāmā*), erysipelas (*visarpa*), boils, itching, mental instability (*mada*) and goiter (*gaṇḍa*). Such is *tiktaśadpalaka ghr̥ta*.

C. states that usually old ghee (preserved for one year or more) is to be used in recipes. The fresh ghee indicated here is an anomaly.

(144-150) A cream of dita, aconite (*prativīṣā*), purging cassia (*sampāka*), black hellebore, velvet leaf, nut grass, cuscus grass (*uśīra*), the three myrobalans, snake gourd, neem, trailing *rungia*, climbing nettle-plant (*dhanvayavāsa*), sandalwood, long pepper (*upakulyā*), bird cherry, turmeric and Indian barberry, sweet flag, bitter apple, wild asparagus (*śatāvarī*), two types of Indian sarsaparilla (black and white), kurchi seeds, camel-thorn (*yāsa*), bowstring hemp, heart-leaved moonseeds (*amṛta*), chiretta, liquorice, and Indian gentian should be combined as a one-fourth part to one part ghee, eight parts of water and two parts of pear (*amṛtphala*) juice. This solution of prepared ghee helps the sufferer of *kuṣṭha* caused by predominant blood-bile *doṣas* (*raktapitta*), bleeding hemorrhoids, erysipelas, excess stomach acid (*amlapitta*), predominant air-blood *doṣas* (*vatarakta*), anemia, pustules, scabies (*pāmā*), mental instability (*unmada*), jaundice, fever, itching, heart ailments, tumors, boils, menorrhagia (*asṛgdara*),

scrofula (*gaṇḍamāla*) and other obstinate ailments not cured by hundreds of other remedies, if taken in a timely way, and taking into account the condition of the patient. Such is the *mahātikṭaka ghṛta*.

As mentioned before, this formula, in almost identical form, is found in Chapter II, section 5 of the Bower Manuscript.

(151-172) Provided that the blockages are removed, blood-letting performed, both external and internal remedies administered, and ointments applied in a timely way, curable types of *kuṣṭha* will be terminated.

Five *tulās* of catechu, one *tulā* each of rosewood tree (*śiṃśapā*) and Indian laurel (*asana*), and a half-*tulā* each of Indian beech, neem (*ariṣṭa*), rattan cane (*vetasa*), trailing *rungia*, *kurchi* plant, Malabar nut (*vṛṣa*), embelia (*kṛmihara*), turmeric and Indian barberry, purging cassia, heart-leaved moonseeds, the three myrobalans, turpeth and dita should all be ground into a coarse powder and boiled in ten *dronas* of water until one-eighth remains. To this is added one *āḍhaka* of the juice of an emblic myrobalan (*dhātrī*), and one *āḍhaka* of ghee, and the paste of one pala each of the very bitter medicines. This ghee, called *mahākhadirghṛta*, alleviates all types of *kuṣṭha* through potions and massage. The *mahākhadiraghṛta* is an excellent formulary for the treatment of *kuṣṭha*. Such is *mahākhadiraghṛta*.

When there is sloughing off of extremities, oozing of lymph and consumption by insects, then cow-urine, neem and embelia are taken as a bath, as a potion, and as an ointment.

Malabar nut, kurchi plant, dita, oleander, Indian beech, neem and catechu, along with cow urine, taken in a bath, as a potion, or as an ointment, dispel parasites and leprous diseases.

Embelia and catechu are excellent in mitigating parasites and leprous diseases through their functions as food and drink, in a shower, in fumigation and in an ointment.

Heart-leaved moonseed, embelia, the roots of purging cassia, and the teeth of dogs, cows, boars and camels are used for removing leprous diseases.

Heart-leaved moonseed, embelia, turmeric and Indian barberry, roots of purging cassia, along with long pepper and the costus plant, are suitable for the removal of leprous diseases.

For a patient with leucoderma (*śvitra*), a full purging is first undertaken. The juice of redwood fig tree (*malapū*), taken along with molasses, is utilized in a *sraṃsana* purging. Then, after being treated with ointments to the fullest extent possible, he should remain in the heat of the sun. The purging will go on for three days. If he wishes to drink, he should take *peyā* gruel.

When pustules have arisen in the patches of leucoderma, they should be punctured with a thorn. After the pustules have discharged, the patient should imbibe either a decoction of redwood fig tree, Indian laurel, perfumed cherry, fennel, boiled in water, every morning for a period of two weeks, or else the alkali of the bastard teak tree with sugar (*phanita*), according to his capacity.

Whatever is beneficial for the treatment of *kuṣṭha* is also useful in cases of leucoderma, particularly a decoction of catechu, or catechu taken as a potion.

For the treatment of leucoderma, an ointment made from arsenic sulfide, embelia, iron sulphate, cow bile, golden thistle and rock salt is to be used.

An efficacious paste for the treatment of leucoderma is composed of the following:

A mixture of an alkali preparation of banana, the ashes of a burnt ass, and the blood of cattle; an alkali preparation of jasmine buds along with the exudations of elephants; a mixture of water-lily, the costus plant, rock salt and elephant urine ground up together; radish and vernonia (*avalguja*) seeds pulverized and made into a paste with cow urine; pulverized redwood fig tree, vernonia and leadwort mixed with cow urine; arsenic sulfide ground up with peacock bile; and the seeds of vernonia and *lac*, along with cow bile, the two types of lead sulphide (*añjana*), long pepper, and iron rustings (*kālaloharajah*).

In certain cases, where the sins of the leucoderma sufferer have been expunged, purging, blood-letting and the intake of rough food such as grain-meal

result in remission.

The term *śvitra* has for the most part been translated as ‘leprosy’. Monier-Williams (p.1106) renders it as ‘white leprosy’. Since hypopigmentation often occurs in cases of leprosy, the text slips effortlessly from *kuṣṭha* to *śvitra*, almost as if the latter were simply another variety of the former. Two problematic details prevent us from grouping the two together. In *ślokas* 13-26, the eighteen types of *kuṣṭha* are described, and *śvitra* is not included. It is true that some forms of leprosy do involve hypopigmentation, but, as previously noted, the definitive mark of *kuṣṭha* is *anesthesia* (*sparśanaghna* or *sparśājñatva*). Therefore, it appears as if the text of this chapter originally began by describing forms of true leprosy, and then at some later date references to diseases characterized by whitening of the skin were added. When *kuṣṭha* was discussed in the first part of this chapter, the symptoms and causes of the disease were first noted, and after that the remedies. With *śvitra*, the reverse sequence is seen. According to C., the treatments for *śvitra* and *kustha* overlap, and it was thought best to continue the listing of remedies, in order to maintain the continuity of the text. Another explanation for this anomaly, however, is that the section on leucoderma was grafted onto the much larger section on leprosy at a later date, with conspicuous and imperfect joinery.

Incidentally, the incursion of diseases exhibiting hypopigmentation into a discussion of leprous diseases may have been due to a heightened concern among the people of South Asia about two millennia ago. It is not known what the incidence of hypopigmentation was at that time, but a recent statistic points to the possibility that disorders with white skin patches are currently a concern in the area. The incidence of diseases such as leucoderma is 3% higher in India than the world incidence of 1 percent (Premila 2006, 204).

(173-176) Leucoderma is known by three designations: *dāruṇa*, *aruṇa*, and *śvitra*, and is in most cases caused by all three of the *doṣas*. If the vitiation is in the blood, then it is a reddish color; if in muscle, then it is a coppery color; if in fat, then it is a white color. The latter instances are more severe than the former ones.

If the patches have merged together, and have small red hairs, and the disease has progressed for several years, then it is incurable.

If the small hairs are not red, if the skin is thin and pale, and if the space between the patches is elevated, then the disease is considered to be curable.

Few clues are given to identify the three types of *śvitra*. To further confuse the matter, *aruṇa* appears in śloka 7 in Chapter 5 of the *Nidānasthāna* of the *Suśrutasaṃhitā*, which is dated later than the

Carakasamhitā, as one of the major *kuṣṭhas*, along with *dadru*, which is listed in the *Carakasamhitā* as just one of the minor *kuṣṭhas*. As a major *kuṣṭha*, *aruṇa* is said to exhibit *svāpa* ‘numbness’, ‘loss of sensation’ (Monier-Williams, p. 1280), a symptom which it had not displayed merely as a type of *śvitra* in the above *ślokas*.

(177) Mendacity, ingratitude, impiety towards the gods, slighting of teachers, sinful actions, misdeeds in previous lives and the taking of incompatible foods are the causes of *śvitra*.

As in earlier *ślokas* of this chapter, in this *śloka* there are listed moral transgressions which are causes of skin disorders. In spite of a plethora of empirical and rational analyses in the bulk of the chapter, the beginning and end of Chapter 7 are highlighted by moral and religious utterances, as if the work is made more substantial by being bracketed with moral discourse.

Śloka 177 is the end of the discourse given by Ātreya. Most of the chapter has been, in essence, a teaching given by him to his disciple Agniveśa.

(178-180) In summary:

The great sage (i.e., Ātreya) in this chapter has given to his disciple Agniveśa (Hutāśaveśa), for his greater remembrance and understanding, an

account of the treatments for *kuṣṭha*. It is thus:

Causation; medical substances; various symptoms; predominance of particular *doṣas*; symptoms of *doṣas* and their occurrence in different cases of *kuṣṭhas*; curable, incurable and barely curable cases of *kuṣṭha*; treatments suitable for the cure of *kuṣṭha*; causes and symptoms of *kilāsa*; the degree of seriousness of cases of *kilāsa*, and its treatment.

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Thus concludes the seventh chapter, on the treatment of *kuṣṭha*,  
in the *Cikitsāsthāna* section of the work composed by Agniveśa and  
redacted by Caraka.

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Part V: Summary and Conclusions

In looking at the chapter on leprous diseases, it might be well to note the descriptive words *sparśanaghna* (destroying tactile sensation) in *śloka* 3, and *sparśājñatva* (absence of tactile sensations) in *śloka* 11. Both these words are used to define *kuṣṭha*. In juxtaposition to the Sanskrit terms, here are some observations from a modern medical work: “Leprosy is characterized by peripheral nerve involvement in all patients and in all forms of the disease... the characteristic change is decreased sensation. This begins peripherally and progresses up the affected limb (Canizares 1982, 277-278)

This symptom is fairly precise. In Chapter 18 of the *Sūtrasthāna*, another section of the *Carakasamhitā*, the topic under discussion is swellings (*śoṭha* or *śopha*), which often seem similar in physical appearance to leprous lesions. The list of symptoms peculiar to swellings includes such vivid descriptions as ‘like cutting’ (*chidyat iva*), ‘like splitting’ (*bhidyat iva*), ‘like pressing’ (*pīḍyat iva*), ‘pinching by needles’ (*sūcībhiriva*), and crawling of ants (*pipilikābhiriva*). These are symptoms of tactile hypersensitivity, not of the numbness and tactile hyposensitivity noted above in cases of *kuṣṭha*. The other characteristics of different types of swellings, such as varied colors, the presence or absence of hairs, etc., compare to those of *kuṣṭha*. Some of the swellings could conceivably have been included in the chapter on *kuṣṭha*, but for one fact, namely, that the symptom which distinguishes *kuṣṭha* (loss of tactile sensation or numbness) from

other anomalies of the skin, including swellings, is not mentioned.

It is quite possible that the original intent of the chapter on *kuṣṭha* was indeed to describe only the disorder which we now know as leprosy. The original author(s) might have been insightful in recognizing the unique neurological signs of leprosy, and describing accurately the disorder of leprosy as it was observed two millennia ago in the Indian sub-continent. The vast range of symptoms appended to the list of eighteen types of *kuṣṭha* may well be collated with particular case studies of sufferers of leprosy, as recorded in the recent past. The signs and symptoms of this disease are so varied as to defy easy categorization. The only characteristic which almost all types of leprosy diseases have in common is the occurrence of *anesthesia*, and the fact that they can all be verified by the laboratory detection of microscopic strains of *Mycobacterium leprae*.

The additions of later writers may have diluted the original parameters to include different types of leucoderma and other varieties of skin diseases, which blurred the lines of precise diagnosis. Even though the hypopigmentation attributed to *kilaśa* and *śvitra* may often be found in the lesions of darker-skinned victims of leprosy, the absence of any reference to loss of tactile sensation is a revealing sign that these two terms do not refer to leprosy, and are probably later additions to this chapter on *kuṣṭha*.

The first English- language translators of the Bible apparently were misled into thinking that the proper rendering of the Hebrew *tzaraath* was 'leprosy'. Later research

indicated that the earlier translators might have tried to affix too precise a meaning to *tzaraath*, when in fact it most likely referred to a range of disorders. Sanskritists, on the other hand, may have erred too much on the side of caution in declining to categorize the term *kuṣṭha* as ‘leprosy’.

Another reason why *kuṣṭha* might indeed refer to the disease now narrowly known as leprosy is its inclusion as an impediment to ordination as a Buddhist monk. In the Pali Vinaya text *Mahāvagga* (Oldenberg 1969, 71-73), a discussion arises as to which ailments should be disqualifications for ordination. The first three which are mentioned are *kuṭṭha*, *gaṇḍa* and *kilāsa*. These are translated as ‘leprosy’, ‘boils’ and ‘dry leprosy’, respectively, in Margaret Cone’s *A Dictionary of Pali* (2001, Part I, 704). Here we have not only a verification of the gravity of *kuṭṭha* (*kuṣṭha* in Sanskrit), such that it is listed foremost among impediments, but we also have a clear separation between *kuṭṭha* and other types of skin ailments.

In regard to the medical formularies cited in the *Carakasamhitā*, scientific research has often confirmed the effectiveness of their active ingredients. For example, the common *āyurvedic* drug *karañja* (*Pongamia pinnata* or *Pongamia glabra*) has been extensively investigated. The substance *karanjin*, which belongs to a class of compounds called *furanoflavones*, contains anti-inflammatory, analgesic and antiulcerogenic properties believed to be responsible for “remarkable healing effects” (Premila 2006, 199-200).

Conspicuous by its absence from the *Carakasamhitā* is the famed chaulmoogra oil, derived from *Hydnocarpus laurifolia*, which provided relief to sufferers of leprosy for many years in South Asia. The earliest attested use was in 1595, as it is mentioned in the *Makhzan-el-Adwiya*, a book on *materia medica* in the Muslim *unani* tradition (Chopra, Chopra, Handa and Kapur 1958, 414). There is, however, an intriguing earlier allusion to a substance called *tuvaraka* in Chap.XIII of the *Suśrutasamhitā Cikitsāsthāna* (Bhishagratna 1998, 453-455). The oil of *tuvaraka* is extolled as being an excellent curative for *kuṣṭha*, but the possibility of *tuvaraka* being synonymous with chaulmoogra oil is impossible to verify at this time. Chaulmoogra oil was used extensively as a remedy for leprosy through the middle of the twentieth century, until it was superseded by drugs such as dapsone. The only other Sanskrit name which was found for this substance is *garudaphala* (Chopra et al., idem) but this name must have been coined fairly late in the development of *āyurveda*, since it appears nowhere in the *Carakasamhitā*.

Even though some controversy does remain as to the precise identification of some ailments and some medicinal plants, nevertheless the *Carakasamhitā* and its later companion text, the *Suśrutasamhitā*, deserve recognition as extraordinary achievements. These two compendia, almost two thousand years old, present a volume and depth of medical information and theory unparalleled in that era, and providing guidelines to practitioners of *āyurveda* even today.

Illustrations



Image1. Map showing world-wide prevalence of leprosy.

(from World Health Organization).



Image 2. Individual exhibiting many of the typical signs of leprosy- lesions, hypopigmentation, atrophy of fingers, collapse of the nasal bridge and ocular degeneration.



Image 3. Hands showing bone atrophy as a result of peripheral nerve impairment (*sparśanagha* in *śloka* 3), historically leading to false accounts of the falling off of extremities.



Image 4. The back of a leper, showing raised lesions, some pustular.



Image 5. Two views of an individual exhibiting the signs of *facies leonina* ???or 'lion face', with collapse of the nasal bridge and the flattening out of facial contours.



Image 6. Circular lesions on arm. Such lesions are noted in the descriptions of several types of leprosy, including *maṇḍala* and *dadru* (*ślokas* 16 and 23, respectively).



Image 7. Nineteenth century Norwegian male, aged twenty-four, showing extensive infiltration of nodules on face.



Image 8. The back of an individual with extensive scale-like lesions. *Ekakuṣṭha* leprosy is described (*śloka* 21) as having fish-like scales, a condition known as *parakeratosis*.



Image 9. Individual exhibiting collapse of nasal bridge and bone atrophy of hands.



Image 10. Individual exhibiting extreme ocular deterioration with opaque eyes.



Image 11. Individual with almost total facial infiltration of nodules.



Image 12. Individual with face engorged by nodules, and collapsed nasal bridge.

Glossary of Medical and Botanical Terms

The identification of medicinal plants used in *āyurvedic* medicine has always been a “thorny subject”, in the words of Dominik Wujastyk. In addition to the erosive nature of the passage of time, regional differences in the naming of plants contribute to the often tentative nature of plant identification. Nevertheless, a conservative tradition in Indian medicine makes it possible to identify, with some degree of probability, if not always certainty, a majority of the plants cited in the *Carakasamhitā* and other *āyurvedic* works. An approach of “triangulation”, as described by Wujastyk, can help to narrow the range of possibilities (1998, 25).

In this glossary, an attempt is made to draw information from a variety of sources, and collate that information into a simple listing of Sanskrit terms, colloquial English equivalents, and the genus and species. The occurrence of a semi-colon indicates the use of a different source. Where discrepancies exist, they are noted.

Sources used include: *Indigenous Drugs of India* by Chopra (C); *Glossary of Indian Medicinal Plants* by Chopra, Nayar and Chopra (CNC); *The Materia Medica of the Hindus* by Dutt (D); *A Sanskrit-English Dictionary* by Monier-Williams (M-W); *Ayurvedic Medicine* by Pole (P); *Caraka Samhitā: A Scientific Synopsis* by Ray and Gupta (RG); *Medicinal Plants of Nepal* (MPN); *The Legacy of Suśruta* by Valiathan (V); *Illustrated Materia Medica of Indo-Tibetan Medicine* by Vaidya Bhagwan Dash (VBD); *Ethnomedical Lore of the Paharias* by

Varghese and Hembrom (VH); *The Roots of Āyurveda* by Wujastyk (W); *Ascetism and Healing in Ancient India* by Zysk (Z1). *Religious Medicine* by Zysk (Z2);

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|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>abhayā</i> | chebulic myrobalan <i>Terminalia chebula</i> (P.194) |
| <i>āḍhaka</i> | a weight equivalent to approximately 3 kg. (W. 311) |
| <i>alābu</i> | bitter gourd <i>Lagenaria siceraria</i> (V. 793) |
| <i>alāsaka</i> | a minor type of <i>kuṣṭha</i> , with extreme itching sensations and redness. |
| <i>ālepa</i> | a paste or salve |
| <i>aloḍana</i> | identified as a drink made from a paste (<i>kalka</i>) of <i>trivṛtā</i> (<i>Operculina turpethum</i>) in the <i>Carakasaṃhitā Sūtrasthāna</i> , Chapter XV, section 17 (trans. by Ram Karan Sharma and Vaidya Bhagwan Dash) |
| <i>āmalakī</i> | emblic myrobalan <i>Phyllanthus emblica</i> (RG. 52); v. <i>triphālā</i> |
| <i>amṛta</i> | heart-leaved moonseed (W. 193); <i>Tinospora cordifolia</i> (D. 106) |
| <i>amṛtaphala</i> | pear <i>Pyrus communis</i> (D. 292) |
| <i>amṛtāsañjna</i> | a variety of copper sulphate |

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| <i>anuvāsana</i> | an enema using oily substances |
| <i>apāmārga</i> | rough chaff tree <i>Achyranthes aspera</i> (RG. 53) |
| <i>āragvadha</i> | purging cassia <i>Cassia fistula</i> (P. 129) |
| <i>ariṣṭa</i> | alcoholic medicinal formulation (V. 809); neem tree (VBD. 8) |
| <i>arjaka</i> | sweet basil <i>Ocimum basilicum</i> (V. 794) |
| <i>arka</i> | purple calotropis (W. 139) ; <i>Calotropis gigantea</i> (V. 794) |
| <i>arśas</i> | hemorrhoids |
| <i>asana</i> | Indian laurel <i>Terminalia tomentosa</i> (U.S.D.A. Forest Service, Forest Products Laboratory (www.fpl.fs.fed.us)) |
| <i>āśava</i> | a wood-apple (<i>kapitha</i>) liqueur (W. 266); a medicated wine (P. 71) |
| <i>āṣphotā</i> | Butterfly pea (MPN. 5); <i>Clitoria ternatea</i> (V. 794) |
| <i>asṛgdara</i> | amenorrhagia |
| <i>āsthāpana</i> | a non-oily enema |
| <i>aśvamāra</i> | sweet- scented oleander <i>Nerium oleander</i> (W. 187) |
| <i>āṭarūṣaka</i> | greater neem (W. 275); <i>Justicia adhatoda</i> (RG. 215) |
| <i>ativiṣā</i> | Indian aconite <i>Aconitum heterophyllum</i> (RG. 54) |
| <i>avacūrṇana</i> | a powder |
| <i>avākpūṣpī</i> | Indian borage <i>Trichodesma indicum</i> (RG. 54) |
| <i>avalguja</i> | <i>Vernonia anthelmintica</i> (RG. 184) |
| <i>bhallātaka</i> | marking nut <i>Semecarpus anacardium</i> (P. 139) |
| <i>bhārgī</i> | blue fountain bush <i>Rothea serrata</i> (Germplasm Resources |

Information Network of U.S. Agricultural Service

(www.ars-grin.gov); *Clerodendrum serratum* (V. 795)

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| <i>bhūnimba</i> | king of bitters <i>Andrographis paniculata</i> (P. 202); green
chiretta (W. 275) |
| <i>bimbī</i> | red gourd (W. 128); <i>Coccinia grandis</i> (V. 795); kunch tree
<i>Cephalendra indica</i> (RG. 55) |
| <i>brāhmī</i> | water hyssop (W. 297); <i>Bacopa monnieri</i> (V. 795) |
| <i>bṛhatī</i> | Indian nightshade <i>Solanum indicum</i> (RG. 55) |
| <i>cakramarda</i> | <i>Cassia tora</i> (V. 795) |
| <i>carmadala</i> | A minor type of <i>kuṣṭha</i> , characterized by redness, cracking of skin,
itching and pain. |
| <i>carmākhyā</i> | v. <i>carmakuṣṭha</i> |
| <i>carmakuṣṭha</i> | a minor type of <i>kuṣṭha</i> , in which patches of skin resemble
elephant skin. |
| <i>chinnaruha</i> | heart-leaved moonseed; v. <i>guḍūcī</i> |
| <i>citraka</i> | white leadwort <i>Plumbago zeylanicum</i> (RG. 56) |
| <i>dadhimaṇḍa</i> | whey |
| <i>dadru</i> | a minor type of <i>kuṣṭha</i> , characterized by circular patches with
raised edges. |
| <i>dantī</i> | snaketooth (W. 26); wild croton <i>Croton tiglium</i> (Z2. 125);
<i>Baliospermum montanum</i> (RG. 56) |

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| <i>dāruharidā</i> | Indian barberry <i>Berberis aristata</i> (P. 170) |
| <i>dārvī</i> | v. <i>dāruharidrā</i> |
| <i>daśamula</i> | the ten roots; v. <i>pañcamūla</i> |
| <i>devadāru</i> | deodar tree <i>Cedrus deodara</i> (P. 171) |
| <i>dhanvayavāsa</i> | <i>Alhagi maurorum</i> (M-W. 509); v. <i>durālabhā</i> |
| <i>dhātakī</i> | fire-flame bush (W. 182); fulsee flower tree (RG. 57); <i>Woodfordia fruticosa</i> (V. 795) |
| <i>dhātrī</i> | emblic myrobalan <i>Emblica officinalis</i> (D. 226) |
| <i>dhava</i> | axle wood (W. 142); crane tree <i>Anogeissus latifolia</i> (RG. 57) |
| <i>doṣa</i> | a bodily disturbance; a “peccant humor” |
| <i>dravantī</i> | purging nut <i>Jatropha curcus</i> (V. 796) |
| <i>drona</i> | a measure of weight; according to Wujastyk (p. 311) about 12 ¼ kg. in the region of Magadha. |
| <i>durālabhā</i> | climbing nettle plant (RG. 77); <i>Tragia involucrata</i> (V. 796);
<i>Alhagi maurorum</i> (D. 146) |
| <i>edagaja</i> | v. <i>guḍūcī</i> |
| <i>ekakuṣṭha</i> | a minor type of <i>kuṣṭha</i> , the symptoms of which include absence of perspiration and fish-like scales |
| <i>elā</i> | cardamom <i>Elettaria cardamomum</i> (V. 796) |
| <i>eraṇḍa</i> | castor <i>Ricinus communis</i> (V. 796) |
| <i>gaṇḍa</i> | goiter |

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| <i>gaṇḍamāla</i> | scrofula |
| <i>gandhaka</i> | sulphur |
| <i>gavākṣī</i> | Bitter cucumber <i>Cucumis colocynthis</i> (RG. 58); Indian
colocynth <i>Citrullus colocynthis</i> (D. 173) |
| <i>ghṛta</i> | ghee (clarified butter) |
| <i>godharasa</i> | lizard broth |
| <i>grahaṇī</i> | dysentery |
| <i>guḍa</i> | molasses (W. 204); dark brown semi-crystallized crude sugar
(RG. 87) |
| <i>guḍūcī</i> | heart-leaved moonseed (W. 276); <i>Tinospora cordifolia</i> (P. 189,
VBD. 157, C. 244) |
| <i>guggulu</i> | Indian bdellium <i>Commiphora mukul</i> (P. 191) |
| <i>gulma</i> | a tumor |
| <i>guṇa</i> | a multiplier of a particular quantity, e.g., two <i>guṇas</i> of the weight
of a stone= two times the weight of that stone |
| <i>guñjā</i> | Indian liquorice (VH.34); jequirity (W. 187); <i>Abrus precatorius</i>
(D. 110-111, V. 795) |
| <i>hareṇu/ hareṇuka</i> | black cardamom (W. 187); <i>Vitex agnus-castus</i> (V. 796, VBD. 41) |
| <i>haridrā</i> | turmeric |
| <i>haritāla</i> | orpiment (arsenic trisulfide) |
| <i>hiṅgu</i> | asafoetida <i>Ferula asafetida</i> (RG. 58) |

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| <i>indravaya</i> | seeds of kurchi (P. 214); v. <i>kuṭaja</i> |
| <i>iṅgudī</i> | zachum oil plant <i>Balanites roxburghii</i> (RG. 59) |
| <i>jala</i> | lit. ‘water’, but on the basis of the usage of <i>rocana</i> ‘bile’ to imply <i>go-rocana</i> ‘cow-bile’, it is likely that this term for ‘water’ or ‘urine’, signifies <i>go-jala</i> or ‘cow urine’ (see VBD. 62) |
| <i>jāti</i> | jasmine <i>Jasminum grandiflorum</i> (RG. 191) |
| <i>jīvantī</i> | sun-creeper (W. 275); cork swallow-wort <i>Dendrobium macrei</i> (RG. 59) |
| <i>kadalī</i> | banana <i>Musa sapientum</i> (RG. 59) |
| <i>kākaṇa</i> | a major type of <i>kuṣṭha</i> , characterized by painful red patches. It is caused by severe vitiation of all the <i>doṣas</i> , and is considered to be incurable. |
| <i>kākanāsā</i> | Indian perry <i>Hygrophilia augustifolia</i> (RG. 60) |
| <i>kākamācī</i> | black nightshade <i>Solanum nigrum</i> (RG. 60) |
| <i>kākodumbara</i> | redwood fig tree <i>Ficus hispida</i> (RG. 60) |
| <i>kakubha</i> | Arjun tree <i>Terminalia arjuna</i> (RG. 53) |
| <i>kālaharajaḥ</i> | iron rustings |
| <i>kaliṅga</i> | v. <i>kuṭaja</i> |
| <i>kalka</i> | a paste or ointment |
| <i>kalpa</i> | a section (<i>sthāna</i>) of the <i>Carakasamhitā</i> dealing with formularies for cleansing, such as emesis, enemas, etc. |

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| <i>kampillaka</i> | kamala dye plant <i>Mallotus philippensis</i> (RG. 61) |
| <i>kanaka</i> | v. <i>nāgakeśara</i> |
| <i>kanakapuṣpī</i> | golden thistle <i>Euphorbia thomsoniana</i> (RG. 61) |
| <i>kanakakṣiri</i> | golden thistle <i>Cleome felina</i> (M-W. 248) |
| <i>kāñjika</i> | sour gruel |
| <i>kapāla</i> | A major type of <i>kuṣṭha</i> , characterized by rough, red and black patches which resemble potsherds. |
| <i>kapha</i> | phlegm, one of the three doṣas. |
| <i>kapittha</i> | wood apple <i>Feronia elephantum</i> (RG. 61) |
| <i>karañja</i> | Indian beech (VH. 138); <i>Pongamia glabra</i> (RG. 60) |
| <i>karavīra</i> | oleander <i>Nerium oleander</i> (V. 798) |
| <i>kārpāsa</i> | Levantine cotton tree <i>Gossypium herbaceum</i> (RG. 62) |
| <i>karṣa</i> | a measure of weight equal to approximately 12 g. in Magadha (W. 311) |
| <i>kāsīsa</i> | iron sulphate (D. 55) |
| <i>kataka</i> | clearing-nut tree <i>Strychnos potatorum</i> (D.62) |
| <i>katphalā</i> | bayberry tree <i>Myrica nagi</i> (RG. 62) |
| <i>kaṭukā</i> | v. <i>kaṭurohiṇī</i> |
| <i>kaṭurohiṇī</i> | black hellebore (Z2. 77); <i>Picrorhiza scrophulariiflora</i> (V. 799);
Picrorhiza kurroa (RG.63, VBD. 167) |
| <i>keśara</i> | fragrant poon <i>Ochrocarpus longifolius</i> (RG. 63) |

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| <i>khadira</i> | catechu <i>Acacia catechu</i> (RG. 63) |
| <i>kilāsa</i> | a type of leucoderma |
| <i>kiṅja</i> | a sour gruel |
| <i>kiṅva</i> | a fermenting agent |
| <i>kirātatikta</i> | chiretta plant <i>Swertia chirata</i> (RG. 63) |
| <i>kiṭima</i> | a minor type of <i>kuṣṭha</i> , with blackish-brown patches |
| <i>kleda</i> | putrefaction |
| <i>koṣātakī</i> | luffa <i>Luffa acutangula</i> (V. 799) |
| <i>kramuka</i> | betel nut <i>Acacia catechu</i> (RG. 63) |
| <i>kṛmighna</i> | embelia <i>Embelia ribes</i> (VBD. 18) |
| <i>koṭha</i> | an eruption with many itching, round spots |
| <i>kṛmihara</i> | embelia (W. 276); v. <i>viḍaṅga</i> |
| <i>kṛtamāla</i> | purging cassia; v. <i>āragvadha</i> |
| <i>kṣāra</i> | an alkaline preparation |
| <i>ksaudra</i> | a pale-colored honey (Tib. <i>ser-kya snañ-pa</i>) (VBD. 80) |
| <i>kṣavaka</i> | sneeze-wort <i>Centipeda orbicularia</i> (RG. 63) |
| <i>kṣudrakuṣṭha</i> | the eleven types of minor <i>kusthas</i> , as listed in <i>Carakasamhitā</i> |
| <i>kuṣṭha</i> | word denoting a leprous disease; also a plant identified as the
costus plant, <i>Saussurea lappa</i> (RG. 64) |
| <i>kustumburu</i> | coriander seed (M-W. 298); <i>Corinadrum sativum</i> (RG. 64) |
| <i>kuṭaja</i> | kurchi (VH. 98); <i>Holarrhena antidysenterica</i> (RG. 64) |

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| <i>lākṣā</i> | lac produced by the insect <i>Coccus lacca</i> , and found in trees such as <i>Butea frondosa palāśa</i> (D. 277) |
| <i>laṅgalaka</i> | superb lily <i>Gloriosa superba</i> (RG.264, VBD. 216-217) |
| <i>langali</i> | v. <i>laṅgalaka</i> |
| <i>laśuna</i> | garlic |
| <i>lavaṇa</i> | common salt |
| <i>lelītaka</i> | sulphur |
| <i>lodhra</i> | lodh tree <i>Symplocus racemosa</i> (RG. 65) |
| <i>loha</i> | aloe <i>Aquilaria agallocha</i> (VBD. 185) |
| <i>mada</i> | mental instability |
| <i>madana</i> | <i>Catunaregam spinosa</i> (V.800); emetic nut <i>Randia dumetorum</i> (RG. 65) |
| <i>madhu</i> | honey (W. 276) |
| <i>madhucchiṣṭa</i> | beeswax |
| <i>madhuka</i> | liquorice <i>Glycyrrhiza glabra</i> (VBD. 6) |
| <i>madhvasava</i> | rum prepared from honey (RG. 90) |
| <i>mahākuṣṭha</i> | the eleven major types of <i>kuṣṭha</i> , as listed in <i>Carakasamhitā</i> |
| <i>malapū</i> | redwood fig tree; v. <i>kākodumbara</i> |
| <i>mālatī</i> | jasmine <i>Jasminum grandiflorum</i> (V. 800) |
| <i>māṃsī</i> | <i>Nardostachys grandiflora</i> (V. 800) |
| <i>manahśilā</i> | realgar (arsenic sulphide) (RG. 82) |

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| <i>maṇḍala</i> | a raised circular patch on the skin. Also, a major type of <i>kuṣṭha</i> characterized by red and white patches of this sort. |
| <i>mañjiṣṭha</i> | madder (W. 134); <i>Rubia cordifolia</i> (V. 800) |
| <i>marica</i> | black pepper <i>Piper nigrum</i> (RG. 66) |
| <i>masuravidala</i> | split lentils |
| <i>matsyaṇḍikā</i> | a sugar preparation (VBD. 82); The Tibetan <i>kha ra'i mdog gser po</i> would indicate that it is of a yellow color. |
| <i>medaka</i> | an alcoholic substance |
| <i>mṛṇāla</i> | leaf-stalk of water-lily (<i>Nymphaea stellata</i>) (D. 110) |
| <i>mudga</i> | mung beans |
| <i>mudgaparṇī</i> | mung-leaf (W. 269); <i>Phaseolus trilobus</i> (RG. 67) |
| <i>mūlaka</i> | radish <i>Raphanus sativus</i> (V. 801) |
| <i>mūrvā</i> | bowstring hemp (W. 275); <i>Sansevieria roxburghiana</i> (VBD. 16) |
| <i>musta</i> | nut grass <i>Cyperus rotundus</i> (P. 228) |
| <i>mustadi</i> | a medicinal powder described in <i>śloka</i> 65-67 |
| <i>nāgara</i> | dried ginger (W. 269); v. <i>śuṅṭhī</i> |
| <i>nāgakeśara</i> | Assam ironwood (MPN. 74); <i>Mesua ferrea</i> (RG. 120) |
| <i>naktamāla</i> | Indian beech <i>Pongamia glabra</i> (D. 154); v. <i>karañja</i> |
| <i>nicula</i> | hizal tree <i>Barringtonia acutangula</i> (RG. 68) |
| <i>nīlotpala</i> | water-lily <i>Nymphaea stellata</i> (D. 110) |
| <i>nimba</i> | neem tree (W. 275); margosa tree (RG. 68); <i>Azadirachta indica</i> |

(V. 801)

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| <i>nirūḍha</i> | purgine |
| <i>padmaka</i> | bird cherry <i>Prunus puddum</i> (RG. 68) |
| <i>pakvarasa</i> | liquor made from sugar-cane and brown sugar (RG. 90) |
| <i>pakvasurā</i> | cucumber <i>Cucumis sativa</i> (M-W. 366) |
| <i>pala</i> | unit of weight equal to about 96 g. in Magadha (W. 311) |
| <i>palāśa</i> | bastard teak (Z1. 259); dhak tree <i>Butea frondosa</i> (D. 129);
Bengal kino tree (RG. 69) |
| <i>pāmā</i> | a minor type of <i>kuṣṭha</i> , marked by eruptions which are white,
reddish, or blackish-brown in color; possibly also a reference to
scabies |
| <i>pañcakarma</i> | intensive detoxifying procedure with five components |
| <i>pañcamula</i> | one group of five roots, as detailed on p. 131 of Bhagwan Dash's
<i>Caraka Saṃhitā</i> , vol. I, include tick trefoil (<i>śālaparṇī</i> or
<i>Desmodium gangeticum</i>); pointed-leaved uraria plant (<i>pṛśniparṇī</i>
or <i>Uraria picta</i>); Indian nightshade (<i>bṛhatī</i> or <i>Solanum indicum</i>);
wild eggplant (<i>kaṇṭakārī</i> or <i>Solanum xanthocarpum</i>); and devil's
weed (W. 275) (<i>gokṣura</i> or <i>Tribulus terrestris</i>). Another group of
five roots, listed on pp. 135-136 of the same work, would,
together with the first group, comprise the <i>daśamūla</i> : |

Bengal quince (RG. 54) (*bilva* or *Aegle marmelos*); Indian trumpet tree (W. 276) (*śyonāka* or *Calosanthes indica*); white teak (W. 77) (*gambhārī* or *Gmelina arborea*); trumpet-flower tree (*pāṭalā* or *Stereospermum suaveolens / chelonoides*); agnimantha or migraine tree (W. 193) (*gaṇikārikā* or *Clerodendrum phlomidis*).

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| <i>pārīṣa</i> | portia tree <i>Thespesia populnea</i> (W. 142) |
| <i>parpaṭaka</i> | trailing rungia <i>Rangia repens</i> (RG. 69) |
| <i>pāṭali (pāṭalā)</i> | trumpet-flower tree <i>Stereospermum chelonoides</i> (RG. 69) |
| <i>pāṭhā</i> | velvet-leaf (W. 142); <i>Stephania hernadofolia</i> (RG. 69) |
| <i>paṭola</i> | snake gourd (W. 269); <i>Trichosanthes lobata</i> (V. 802) |
| <i>patra</i> | tamala (D. 321); cassia cinnamon (W. 193); cinnamon tree <i>Cinnamomum tamala</i> (RG. 69) |
| <i>peyā</i> | thin gruel |
| <i>phalgu</i> | <i>Ficus hispida</i> (V. 802); v. <i>kākodumbara</i> |
| <i>phaṇījjhaka</i> | sweet basil <i>Ocimum basilicum</i> (VBD. 223) |
| <i>picumarda</i> | neem tree <i>Azadirachta indica</i> (M-W. 624); v. <i>nimba</i> |
| <i>piplu</i> | a skin ailment marked by dark blotches. |
| <i>pippali</i> | long pepper <i>Piper longum</i> (V. 802) |
| <i>pitta</i> | bile; one of the three <i>doṣas</i> . |
| <i>plava</i> | <i>Cyperus esculentus</i> (V. 802); bulrush (MPN. 21); <i>Scirpus</i> |

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| | <i>kysoor</i> (VBD. 123) |
| <i>poṭṭalī</i> | a compress or dressing applied to distressed area |
| <i>pradeha</i> | ointment; salve |
| <i>pragharṣaṇa</i> | an abrasive; a rubbing |
| <i>prapaunḍarīka</i> | root of <i>Nymphaea lotus</i> (M-W. 682); <i>Wendalandia exerta</i> (RG. 152) |
| <i>prapunnāda</i> | senna <i>Cassia tora</i> (M-W. 682) |
| <i>prastha</i> | a unit of weight equal to about ¾ kg. in Magadha (W. 311) |
| <i>prativiṣā</i> | <i>Aconitum heterophyllum</i> (M-W. 663) |
| <i>priyaṅgu</i> | perfumed cherry <i>Aglaia roxburghiana</i> (RG. 70) |
| <i>pr̥thvīkā</i> | greater cardamom <i>Ammonum subulatum</i> (RG. 70) |
| <i>punarnavā</i> | Indian hogweed <i>Boerhaavia repens</i> (RG. 71) |
| <i>puṇḍarīka</i> | the white lotus <i>Wendalandia exerta</i> (VBD. 152); a major type of <i>kuṣṭha</i> , characterized by patches which are white inside and red on the edges, and which resemble the leaves of white lotuses. |
| <i>pūtīka</i> | Indian spinach (W. 141); Bengal quince <i>Aegle marmelos</i> (RG. 65) |
| <i>rajanī</i> | turmeric <i>Curcuma longa</i> (V. 803) |
| <i>rājavṛkṣa</i> | <i>Cassia fistula</i> ; v. <i>āragvadha</i> |
| <i>rasa</i> | mercury |
| <i>rasāñjana</i> | described as a mixture of Indian barberry (<i>Berberis aristata</i>) and boiled milk, beneficial for infections (P. 170), or, alternatively, |

as a compound of *Holarrhena antidysenterica*, *dhātaki* (*Woodfordia floribunda*) and ginger, helpful in diarrhea (D. 108).

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| <i>rocana</i> | bovine bile |
| <i>rohiṇī</i> | Indian redwood tree <i>Soymida febrifuga</i> (RG. 71) |
| <i>rohitaka</i> | white cedar <i>Amoora rohitaka</i> (RG. 71) |
| <i>ṛṣyajihva</i> | a major type of <i>kuṣṭha</i> , characterized by blotches with red edges and brown centers, and resembling the tongue of the <i>ṛṣyajihva</i> antelope. |
| <i>ṣadgranthā</i> | sweet flag (VBD. 37); v. <i>vacā</i> |
| <i>śaila</i> | realgar; v. <i>manaḥśilā</i> |
| <i>saindhava</i> | salt from Sind area; rock salt |
| <i>saktu</i> | ground meal (M-W. 1132) |
| <i>śāla</i> | sal tree <i>Shorea robusta</i> (RG. 71) |
| <i>śali</i> | rice <i>Oryza sativa</i> (W. 77) |
| <i>saptacchada</i> | v. <i>saptaparṇa</i> |
| <i>saptaparṇa</i> | dita <i>Alstonia scholaris</i> (RG. 72) |
| <i>sāriṇa</i> | Indian sarsaparilla <i>Hemidesmus indicus</i> (RG. 72); the two varieties are black (<i>kṛṣṇa</i>) and white (<i>śveta</i>). |
| <i>sarjarasa</i> | white dammer tree resin (W. 141); <i>Vateria indica</i> (V. 804) |
| <i>sarjikālavaṇa</i> | natron salts (M-W. 1184), i.e., hydrated sodium carbonate |

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| <i>sarpiṣ</i> | ghee; v. <i>ghṛta</i> |
| <i>sarṣapa</i> | mustard plant <i>Brassica juncea</i> (V. 704); rape plant <i>Brassica campestris</i> (RG. 72) |
| <i>śatapuṣpā</i> | fennel (C. 176, P. 175); <i>Foeniculum vulgare</i> (P. 175) |
| <i>śatāru</i> | a minor type of <i>kuṣṭha</i> , characterized by red or blackish-brown patches with a burning sensation. |
| <i>śatāvarī</i> | wild asparagus (W. 140); <i>Asparagus racemosus</i> (RG. 261) |
| <i>saurāṣṭrī</i> | alum; more precisely, a double sulphate of aluminum and potassium or aluminum and ammonia (<i>Taber's Medical Dictionary</i> , p. 81) |
| <i>sauvarṇī</i> | Indian barberry (Cakrapāṇidatta's commentary on <i>śloka</i> 76-80); v. <i>dāruharidā</i> |
| <i>sauviraka</i> | fermented barley-water (W. 77) |
| <i>sevya</i> | cuscus grass <i>Andropogon squarrosus</i> (RG. 76); cited as synonymous with <i>uśīra</i> (VBD. 145), but v. <i>uśīra</i> , usually classified as <i>Vetiveria zizanioides</i> |
| <i>siddhārtha</i> | white mustard <i>Brassica campestris</i> (RG. 115) |
| <i>siddhārthaka</i> | a type of curative bath discussed in <i>śloka</i> 91 |
| <i>sidhma</i> | a major type of <i>kuṣṭha</i> ; white and coppery in color, and generally located in the chest. |
| <i>sīdhu</i> | molasses rum (W. 77) |

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| <i>śigru</i> | Drum-stick plant (RG. 73); <i>Moringa pterygosperma</i> (D. 118) |
| <i>śilājatu</i> | bitumen |
| <i>śimśapā</i> | rosewood tree <i>Dalbergia sissoo</i> (RG. 73) |
| <i>śirīṣi</i> (<i>śirīṣa</i>) | siris tree <i>Albizia lebbek</i> (RG. 73) |
| <i>śitarasa</i> | sugar-cane liquor (RG. 90) |
| <i>śleṣman</i> | phlegm, one of the three <i>doṣas</i> . |
| <i>śobhāñjana</i> | v. <i>śigru</i> |
| <i>sparsājñatva</i> | loss of tactile sensation; <i>anesthesia</i> , which is one of the principal indicators of the disease of leprosy |
| <i>sparsanaghna</i> | impairment of tactile sensations |
| <i>sphoṭa</i> | a minor type of <i>kuṣṭha</i> , marked by thin pustules which are either white or reddish. |
| <i>sraṃsana</i> | a type of purging |
| <i>ṣṛṅga</i> | an animal horn |
| <i>sudhā</i> | thorny milk-hedge <i>Euphorbia nerifolia</i> (RG. 73) |
| <i>sumanā</i> | jasmine <i>Jasminum grandiflorum</i> (V. 805) |
| <i>śuṅṭhī</i> | dried ginger <i>Zingiber officinale</i> (VBD. 86) |
| <i>supti</i> | numbness |
| <i>surasā</i> | basil <i>Ocimum sanctum</i> (RG. 74) |
| <i>suradruma</i> | deodar tree; v. <i>devadāru</i> |
| <i>suvarṇamāksika</i> | copper pyrite |

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| <i>svayathu</i> | edema |
| <i>śvetakaravīra</i> | white oleander; v. <i>karavīra</i> |
| <i>śyāmā</i> | black turpeth tree (Z2. 112); <i>Operculina turpethum</i> (V. 805) |
| <i>svayathu</i> | edema |
| <i>tagara</i> | Indian valerian <i>Valeriana wallichii</i> (P. 275) |
| <i>taila (tila)</i> | sesame oil (RG. 89) |
| <i>tamālapatra</i> | Mysore gamboge tree <i>Garcinia xanthochymus</i> (RG. 74) |
| <i>tarpana</i> | meal; grain; v. <i>saktu</i> |
| <i>tiktaroḥiṇi</i> | black hellebore <i>Helleborus niger</i> (M-W. 446) |
| <i>tiniśa</i> | chariot tree (RG. 75); <i>Ougeinia dalbergioides</i> (V. 806) |
| <i>trapusa</i> | cucumber <i>Cucumis sativus</i> (V. 806) |
| <i>trāyamāṇā</i> | Indian gentian (W. 298); <i>Delphinium zalil</i> (RG. 75) |
| <i>trikaṭu</i> | a mixture of three pungent spices (dried ginger or <i>śuṅṭhī</i> , black pepper or <i>marica</i> , and long pepper or <i>pippalī</i>) (P. 302) |
| <i>triphalā</i> | the three myrobalans (<i>āmalakī</i> , <i>vibhītakī</i> , <i>harītakī</i>) (W. 152);
<i>Emblica officinalis</i> , <i>terminalia belerica</i> , and <i>terminalia chebula</i> ,
respectively (P. 303) |
| <i>trivṛtā</i> | turpeth <i>Operculina turpethum</i> (RG. 75) |
| <i>tryūṣaṇa</i> | the three pungent spices (M-W. 463); v. <i>trikaṭu</i> |
| <i>tumburu</i> | coriander <i>Coriandrum sativum</i> (RG. 64); <i>Xanthoxylum alatum</i>
(CNC. 260, KB. 249) |

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| <i>tuṣodaka</i> | fermented bean-husk water (W. 77) |
| <i>tuttha</i> | copper sulphate (VBD. 194) |
| <i>udumbara</i> | cluster fig (W. 142); <i>Ficus racemosa</i> (V. 806). Also, a major type of <i>kuṣṭha</i> , characterized by brown hair on patches of skin, and resembling the <i>udumbara</i> fruit. |
| <i>udvartana</i> | ointment |
| <i>upakulyā</i> | long pepper (VBD. 28); v. <i>pippalī</i> |
| <i>uṣīra</i> | cuscut grass (W. 175); <i>Vetiveria zizanioides</i> (V. 806) |
| <i>utkleśa</i> | pain |
| <i>utpala</i> | water lily (W. 181); <i>Nymphaea stellata</i> (RG. 76) |
| <i>vacā</i> | sweet flag <i>Acorus calamus</i> (P. 284) |
| <i>vajra</i> | diamond |
| <i>vāpya</i> | costus plant (VBD. 64); v. <i>kuṣṭha</i> |
| <i>varāha rudhira</i> | boar's blood |
| <i>varaṅga</i> | bark of purging cassia (M-W. 922) |
| <i>vāsā</i> | Malabar nut <i>Adhatoda vasica</i> (RG. 77) |
| <i>vāta</i> | air, one of the three <i>doṣas</i> |
| <i>vatsaka</i> | kurchi; v. <i>kuṭaja</i> |
| <i>vāyu</i> | air, one of the three <i>doṣas</i> . |
| <i>vetasa</i> | rattan cane <i>Calamus viminalis</i> (RG. 77) |
| <i>vicarikā</i> | a minor type of <i>kuṣṭha</i> , marked by oozing and itching blackish- |

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| | brown pustules. |
| <i>viḍaᅅga</i> | embelia <i>Embelia ribes</i> (P. 290) |
| <i>vidradhi</i> | an abscess |
| <i>vipādikā</i> | a minor type of <i>kuᅣᅣᅣha</i> , characterized by extreme pain, and cracks
in the palms and the soles of the feet. |
| <i>vipāka</i> | an after-taste which emerges after digestion |
| <i>virecana</i> | purging |
| <i>virodha</i> | incompatibility, as in foods that should not be taken together |
| <i>viśālā</i> | bitter apple (W. 276); <i>Citrullus colocynthis</i> (VBD. 11) |
| <i>visarpa</i> | erysipelas |
| <i>visphoᅣa/</i> | an eruption; a boil |
| <i>visphoᅣaka</i> | |
| <i>vᅣkᅣaka</i> | conessi, kurchi <i>Hollarrhena antidysenterica</i> (C. 342) |
| <i>vᅣᅣa</i> | Malabar nut (VBD. 106); v. <i>vāsā</i> |
| <i>vyaᅅga</i> | a skin ailment marked by facial blotches. |
| <i>vyoᅣa</i> | the three pungent spices (M-W. 1041); v. <i>trikaᅣu</i> |
| <i>yāsa</i> | camel thorn (RG. 77); <i>Alhagi maurorum</i> (M-W. 852);
v. <i>durālabhā</i> |
| <i>yaᅣᅣayāhva</i> | liquorice (M-W. 849); v. <i>madhuka</i> |
| <i>yaᅣᅣimadhuka</i> | liquorice (W. 143); <i>Glycyrrhiza glabra</i> (V. 807) |
| <i>yava</i> | barley <i>Hordeum vulgare</i> (V. 807) |

yogarāja

a concoction of *guggulu* and several other substances, used in cases of rheumatism and other maladies caused by a vitiation of air. It is detailed in Dutt, p. 134.

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Vita

Bob Gallagher was born in New York City in 1944, and graduated from Brooklyn Prep in 1960 in Classical Honors (Latin, Greek and French). After a year at LeMoyne College in Syracuse, he served on active duty in the U.S. Marine Corps in 1961. From 1962 to 1968, he attended Hunter College, New School for Social Research and Columbia Univ., and also worked as a gardener, cemetery worker, and bookstore clerk. He graduated from Queens College in 1968 with a B.A. in Linguistics. Bob was awarded a National Defense Education Act fellowship at Univ. of Washington in Seattle, where he studied Tibetan, Mongolian, Old Uighur and Buddhism. In 1970 he enrolled at Banaras Hindu Univ. in Varanasi, India, to study Sanskrit. He then resided for one year at Takshindu Monastery in the Sherpa region of Nepal, after which he continued Tibetan studies at the Tibetan Library in Dharamsala, H.P.

He received his M.A. in Tibetan Language and Literature from Univ. of Washington in 1975. His thesis title was: *The Autobiography of the Sherpa Lama Ngag-dbang nor-bu bzang-bo*. After further study in Tibetan, Mongolian, Uzbek and Turkic Linguistics, he was awarded the Ph.C. degree in 1980. From 1980-2005 he was employed at the U.S. Postal Service as a letter carrier and technician. From 2008 he has been in the Asian Studies M.A. program at Univ. of Texas.

This report was typed by the author.

e-mail address: bobvirgie@hotmail.com